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ACUTE GASTRITIS IN CATTLE, COMMONLY KNOWN AS GRASS DISEASE.*

BY J. CLARK, F.R.C.V.S., COUPAR-ANGUS.

I HAVE selected this particular disease in cattle as being very suitable and appropriate for our meeting here, as I believe, to the best of my knowledge, it shows itself more particularly in Forfarshire, Perthshire, and Fifeshire, than any other part of Scotland. I have carefully consulted every available text book on the subject without finding the slightest record of the disease in question, with the exception of a short account of an inflammatory disease of the stomach in cattle, given in the occasional papers on veterinary subjects by Professor Dick.

I find great diversity of opinion and confusion exists as to the history, causes, treatment, &c., and I desire specially to point out that I believe this disease differs in several important points from what is ordinarily known and described as "grass staggers" in cattle and horses.

The disease is best known in this district as "grass disease" or caking (signifying impaction of manyplies), and is seen only at a fixed period of the year, viz., from the end of April until the middle of June, that is a period of six or seven weeks—the period named being early or late according to the season. It is a well-known and ascertained fact that a great deal depends on the character of the grass as to the number of animals attacked; this in turn being influenced by a wet or dry season. I generally find that in seasons where we have a well-marked and good sole of clover and natural grasses

* Read at the meeting of the Scottish Metropolitan Veterinary Association, held on July 4th.

coming up, we do not find such large numbers attacked, and it is on this point and the time of year we get a divergence between this disease and so-called stomach staggers, the cause of the latter being ascribed to the quantity and narcotic quality of the ryegrass.

The disease first came prominently under my notice about twenty years ago, and I can well remember my astonishment on seeing the various stages of the disease, and which I found to be totally different from anything I had ever seen in cattle practice with two exceptions, although having seen practice in various parts of England and Scotland. I consequently expect some members present may never have seen or heard of the disease. I was so much interested that I framed a series of questions, so that I might interview any professional or lay members likely to afford me any clue as to its nature.

I therefore propose to go over a few of the principal questions *seriatim*, at the same time shortly stating the result attained.

1. Has age to do with it?—I find animals of all ages and breeds are liable, when put on fields favourable, to the development of the disease.

2. On what class of land do you mostly find the disease?—In my experience, light, gravelly soils show most cases, but believe it is not confined entirely to such. Poor land is very liable, and even good land poorly treated will show it. I have in my recollection at this moment one farm where the disease in its season was never absent, being then in poor condition, but which for a good number of years has been well farmed, and I am not aware that any case has occurred for a good number of years.

3. Have you fields more subject than others on your farm?—On inquiry I found this was the case, the explanation being evidently that we rarely find any farm without showing different kinds of soils.

4. Do you think town manure has anything to do with it?—A considerable number are of opinion that this is a common cause. I have, however, never been able to satisfy myself on this point, as I have known many serious attacks and fatal cases where town manure was never used. The very probable solution is that occasionally cases of lead poisoning have occurred.

5. What class of seeds do you sow with, and what proportion of perennial and Italian ryegrass do you use per acre?—The general answer here was, on an average one bushel of perennial ryegrass and a few pounds of Italian, with the

usual quantity of permanent grasses and clovers. My impression is that, on certain soils, too large a proportion of ryegrass is used, and too small a quantity of permanent grasses and clovers. This has been confirmed by diminishing the quantity of ryegrass and increasing permanent grasses, the latter course giving the satisfactory result of non-appearance of disease on land known to be favourable to such attacks.

6. How long are the cattle out before cases are seen?—This varies considerably according to season. It may be taken as a general rule that cattle put out early in April show the disease towards the end of that month and the beginning of May.

7. When does the disease disappear?—It is a well-known saying that once the white clover appears the attacks are practically at an end. White clover in our district usually appears from the 10th to the 15th of June.

8. Does it occur, to your knowledge, on second and third year's grass?—It is well known to be most dangerous on first year's grass, less so on second year's, and rarely, if ever, on third. I have, however, known cattle escape first year's grass and attacked on pasturing second year.

9. What preventive measures do you adopt, if any?—I find a strong consensus of opinion that the attacks are greatly modified by artificial feeding, such as giving bran mashes and treacle to cows, and linseed or decorticated cotton cake to store and feeding cattle.

The foregoing are the principal points relative to the disease; I made a number of others, but think those stated are sufficient for my purpose to-day.

The premonitory symptoms are not well marked, but to those acquainted with the disease, the animal is seen to be loitering about, feeding occasionally, and if it lies down, a characteristic flapping or restless movement of the ears may be observed; if you attempt to bring an animal from the field even at this early stage, the slightest excitement or running, the chances are the animal becomes blind ere you reach your destination. The next symptom observable is purging of a black and watery character. The animal now obstinately refuses all food and water, in cows sudden failure of milk supply, persistent grinding of the teeth, accelerated pulse, cold extremities, animal blind, but hearing is usually as acute as ever. At no stage of the disease have I found any appreciable elevation of temperature, and an early symptom is intermittent tremors at the elbow and flank. My experience this at the disease runs a course of usually three days before

the crisis is reached. On the third day, sooner or later, urgent symptoms may be suddenly developed, the animal becomes intensely excited, violent tremors, bellows fearfully, presses its head against the wall, or, if unfastened, scrambles up against the wall, and is evidently suffering pain of the most formidable character.

"POST-MORTEM" APPEARANCES.

The most common, and indeed constant, abnormal condition is intense inflammation of the abomasum or true stomach, and small intestines. I wish particularly to call attention to the condition of the omasum or manyplies which, in rapidly fatal cases, is in a soft condition, and by no means unhealthy; it is only when the animal has *been suffering for days* that we find, on death or slaughter, a hardened condition accompanied by small red or congested spots, which has given rise to the erroneous opinion that the animal has suffered from obstinate constipation. Such, I feel certain, is not the case, the hardened or dry condition being the result, and not the cause, of the disease.

I think it extremely probable, on considering the whole merits of the case, that the disease is induced by an irritant, being also more or less narcotic in character, causing mal-assimilation of food, and, as a result, non-nutrition of blood, accompanied by inflammation of the true stomach and intestines, this being the only constant morbid condition found on *post-mortem inspection.*

Treatment is of the most various and contradictory nature. For many years, in my practice, the invariable treatment, giving the most satisfactory results, has been linseed oil as a purgative. Experience proves conclusively that Epsom salts are not only highly objectionable, but are calculated in a very large degree to reduce the chance of recovery. I am aware that many will disagree with me on this point; but if the *post-mortem* appearances are any indication as to treatment, I think all present will agree with me that in no case is it desirable to risk such treatment. I have tried all methods of treatment, but find no two cases give the same result, consequently a large percentage of cases are fatal. Bleeding is most uncertain, and so unsatisfactory that I have abandoned it altogether. For instance, I have started to bleed a number of cattle with a view to prevention, and where certainly no apparent sign of disease could be seen, and ere I had finished with my work, have found an animal show brain symptoms, evidently being the subject of disease when I bled it. I have also bled an

animal which I knew was affected, but in the quiet stage, become half an hour afterwards raging mad. Such results make one rather sceptical as to benefit to be derived from such treatment in the cases recorded by Professor Dick, and quoted by Professor Williams in his "Principles and Practice of Veterinary Medicine." Great benefit is said to have been derived from bleedings and strong doses of purgative medicine. I regret to say I cannot confirm this statement; in fact, my experience is quite the reverse, and I have tried every likely remedy, such as soda bicarb. with linseed oil, morphia, belladonna, chloral hydrate, hot fomentations to the abdomen, followed by mustard, and all with unsatisfactory results.

When brain symptoms set in, great benefit can be obtained from continued application of cold water to the head.

I advise, when the animal is in good condition, immediate slaughter, as being not only most humane, but also most profitable, the attacks of disease being so fatal in a large percentage of cases. Every possible effort ought to be tried in the shape of prevention. This, I believe, can be only attained by a careful study and application of suitable grasses to suitable soils. I know many farmers who are under the necessity of renting grass parks—I mean permanent pasture—to tide them over the dangerous period of May and June.

DISEASES OF HORSES IN MASHONALAND.

BY DR. RAYNER, CAPE OF GOOD HOPE.

THE greatest scourge of the country as regards diseases of animals, is the Horse-sickness. It is the same disease that prevails in Bechuanaland, and carries off hundreds of horses.

The British South Africa Company, I was informed, lost all but 19 out of 600 horses during their first year in the country.

Mules are also liable to this sickness, though apparently less so than horses; but donkeys are exempt.

I noticed many points of similarity between this disease and malarial fever common to human beings. Both occur most frequently during certain months, and are most likely to be contracted in the same kind of place, viz., low-lying, damp ground, especially in the neighbourhood of rivers and marshes. Both are less common on the high ground, and, in fact, almost absent during certain months; and both disappear under sanitation and cultivation of the soil.

If by chance a horse should "salt,"—that is, recover—he is for a long time in a state of debility, and is, like a person who has suffered from malarial fever, liable to relapses, which are less severe than the primary attack, and from which he usually recovers.

In one point, however, they are essentially dissimilar, namely in the effect produced upon them by quinine.

In the case of malarial fever, this drug is a specific; but, unfortunately, in the case of Horse-sickness, it has never been satisfactorily demonstrated that quinine, even in large doses, produces any other effect than that of lessening the temperature.

This it undoubtedly does, especially when combined with alcohol; but the temporary benefit so obtained appears to be solely on the account of the apyrexia so produced, and not because the drug has any effect upon the poison of the disease itself.

No plan of treatment yet tried has succeeded, and horses appear just as likely to "salt," if left entirely to themselves.

It is to the prevention, and not the cure, that we must look. Something more definite must be found as to the cause, and until then I feel sure much of our care and trouble will be vain.

Much more could be said on this interesting subject, but I fear it would hardly come within the scope of this report.

[This scourge has been more than usually destructive in South Africa recently, and has roused the local government into action. We mentioned lately that the Cape government had deputed Dr. Edginton to investigate its nature and suggest measures of prevention, and it would now appear that a cure is being sought for, as we find the *Cape Argus* of May 18th, making the following allusion to this step:

"The action of the Government in officially recognising Mr. P. Roux and his Horse-sickness cure, will be generally approved. The present is not, however, the first occasion in the history of the Cape on which a similar course has been adopted. Mr. Roux's case calls to mind the great services rendered in former years by the late Mr. Jacobus Esterhuysen, of Zonnebloem (the Kaffir College.)

Whilst there were a number of Veterinary Surgeons available, Mr. Esterhuysen, as a simple farmer, was invariably preferred, and it is said performed marvellous cures upon horses, cows, and other animals suffering from disease; and during the murrain of lung-sickness amongst cattle he was employed by the Cape Town Municipality for the daily examination at the shambles of the meat for comsumption.

With such an example before us, it may be hoped that the advice and assistance of Mr. Roux, although that gentleman does not hold a diploma as Veterinary Surgeon, will prove a service to the Colony."

It seems from correspondence in the same periodical, that the remedy relied upon by Mr. Roux is lime water to drink, and rock salt. A piece of limestone is put in the water and frequently stirred, the mixture being allowed to settle before being offered to the horses. Stockholm tar is also put into their mouth and nostrils once a week. Cures are said to have been effected by this treatment on farms where previously every soliped attacked had succumbed to the disease].

LAMENESS FROM ENLARGEMENT OF THE INFERIOR TUBEROSITY OF THE SMALL METACARPAL BONE.

BY VETERINARY-CAPTAIN J. A. NUNN, F.R.C.V.S., D.S.O., PRINCIPAL, LAHORE VETERINARY COLLEGE; AND VETERINARY-LIEUTENANT L. J. BLENKINSOP, M.R.C.V.S., VETERINARY SURGEON TO THE PUNJAB GOVERNMENT, AND PROFESSOR AT THE LAHORE VETERINARY COLLEGE.

THE case in question was that of a grey Arab pony, which was brought to the Lahore Veterinary College on February 10th, lame of the off fore leg. The owner stated that the animal had been under treatment for a supposed sprain of the flexor tendons of that limb, and certainly there were marks of the actual cautery on it. On examination, it was discovered that the bulb of the lower end of the small metacarpal bone of the limb was very much enlarged, and interfered with the nerve; and as on pressure there was great pain and the lameness was much increased, it was determined to remove the excess in growth of the bone. On February 16th, the animal was operated upon, a longitudinal incision being made over the enlarged bulb, the tissues dissected back, and about one and a-half inches of the end of the bone removed by means of sharp bone forceps.

The pony was discharged on February 29th, and brought again for inspection on May 19th, when it was going sound, its owner having ridden it daily. The seat of operation was only marked by a linear cicatrix, and on manipulation of the part there was complete absence of pain.

This is the third case of this description that has come under our notice, the other two having also been successfully operated upon in a similar manner.

THE USE OF COCAINE IN MASKING LAMENESS.

BY VETERINARY-CAPTAIN J. A. NUNN, F.R.C.V.S., D.S.O., PRINCIPAL LAHORE VETERINARY COLLEGE; AND VETERINARY-LIEUTENANT L. J. BLENKINSOP, M.R.C.V.S., VETERINARY SURGEON TO THE PUNJAB GOVERNMENT, AND PROFESSOR AT THE LAHORE VETERINARY COLLEGE.

THE following notes on the result of the subcutaneous injection of the hydrochlorate of cocaine are reported, as they may be found of importance in legal cases where this drug is stated to have been employed as a means of masking lameness by unprincipled people in the disposal of unsound horses.

In the cases above referred to, the subcutaneous injection of the drug was used as an aid to the diagnosis of more or less obscure cases of lameness. In every instance the solution used was of a fixed strength, 10 per cent., and the injection was carried out with an ordinary hypodermic syringe over the external and internal metacarpal nerves, at the spot where these are usually divided in the operation commonly known as that of "higher neurotomy."

The patients were trotted before the injection was made, and the degree of lameness was carefully noted. They were afterwards trotted for a short distance every five minutes, and the time carefully noted when the effect of the anæsthetic caused the original degree of lameness to become lessened, or for the animal to be able to trot free from lameness. The observations were carried on until the lameness returned to the same degree as it existed before the injection had been made.

It will be seen that the time required for the action of the drug to take place in these cases varied from 5 to 15 minutes. The full anæsthetic action lasted 10 to 15 minutes, and the time required for the original degree of lameness to return varied from 10 to 45 minutes. From this it will be seen that a horse might easily be shown for sale suffering from disease localised in one or both feet, and that the animal might, with the aid of cocaine, be able for the time being to trot fairly sound.

The improvement in the action obtained in this way could scarcely deceive a professional man, as the action resembles that of an animal in whose limb the metacarpal nerves have been divided; but it might very easily be a means of deceiving a less experienced purchaser.

Case.	Animal	Disease.	Injection.	Total amount Hydrochlorate of Cocaine used.	Result.
A.	Country-bred mare, 13 hands 3 inches high. Six years old.	Lame off fore from navecular-arthritis. Lameness existing for 9 months.	Mm. xx. 10 p.c. solution of hydrochl. cocaine over external and internal metacarpal nerves.	4 grs.	After 5 minutes, trotting sound. „ 10 minutes, do. „ 15 minutes, slightly lame. „ 20 minutes, lameness increasing. „ 25 minutes, degree of lameness the same as before injection.
B.	Cabuli mare, about 13 hands high. Aged.	Lame off fore from chronic laminæ disease.	Mm. xxx. 10 p.c. solution of hydrochl. cocaine over off fore metacarpal nerves.	6 grs.	After 5 minutes, lameness less. „ 10 minutes, do. „ 15 minutes, lameness increasing. „ 20 minutes, degree of lameness the same as before injection.
C.	Australian gelding, about 15 hands high. Aged.	Lame both fore feet, chiefly off fore.	Mm. xxx. 10 p.c. solution of hydrochl. cocaine over off fore metacarpal nerves.	6 grs.	After 5 minutes, lameness less. „ 10 minutes, distinctly lame near fore; sound off. „ 15 minutes, do. „ 20 do. do. „ 25 minutes, lameness off for returning. „ 30 minutes, degree of lameness the same as before injection.

Case.	Animal.	Disease.	Injection.	Total amount Hydrochlorate of Cocaine used.	Result.
D.	Country-bred mare, 13 hands 3 inches high. Aged.	Navicular disease off fore.	Mm. xxx. 10p.c. solution of hydrochl. cocaine over off fore metacarpal nerves.	6 grs.	After 5 minutes, lameness less. „ 10 minutes, do. „ 15 minutes, sound. „ 20 do. do. „ 25 do. do. „ 30 minutes, trotting slightly short. „ 35 minutes, do. „ 40 do. do. „ 45 do. do. „ 50 minutes, degree of lameness the same as before injection.

With regard to the use of this drug as an aid to diagnosis, the following suggestions are made:—

1. The syringe used should be fitted with a fine needle;

2. It should be scrupulously clean, and the solution used should be, if possible, made with sterilised water in sterilised vessels;

3. Care should be taken not to injure the arteries and veins at the seat of injection;

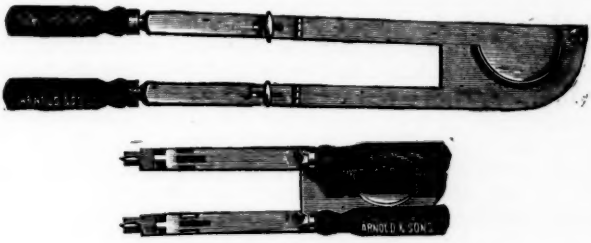
4. In cases where the action of joints is mechanically interfered with, little assistance to correct diagnosis will be obtained by the use of cocaine, as there is usually in these cases only slight lessening of the lameness.

IMPROVED PORTABLE DOCKING INSTRUMENT.

BY JAS. COOKE, F.R.C.V.S., SCARBOROUGH.

I AM not an advocate for indiscriminate docking, but when it is necessary to perform the operation, I think it should be done in the most humane and scientific way possible. With these objects in view, I had a docking instrument made for me by Messrs. Arnold & Sons, of West Smithfield, London, which I know to have certain advantages over the ordinary

knives now in use. The leverage in this instrument is great; the blade has a cutting action in a backward direction, consequently, as the handles come closer together, the tendency is to gain more power over it. The arrangement of the pivot and niche obviates any tendency to severing. The socket or



receptacle for the tail is deep, which prevents the organ becoming displaced. The handles can be folded by simply turning the thumb-screws, thus making it a portable instrument which can be carried in the coat pocket.

SCIATICA.*

BY JOHN SCOTT, M.D.V.

DURING the summer of 1890, I was called upon to treat the following case which I diagnosed as sciatica; and as I have only seen two such cases during a practice of six years, both of which occurred under conditions almost identical, and both in horses kept for racing purposes, I infer that such cases are somewhat rare in our patients. I am forced to this conclusion, not because I have only been fortunate enough to see two cases, but from the fact that in all the works on veterinary science that I have had an opportunity of reading, I fail to find such a disease even mentioned; and in our veterinary journals the only place I see such a disease referred to is in the March, 1889, number of the *Review*, where a case is recorded; but that is an extract from a foreign journal. For those reasons I call your attention to it today, and hope it may prove as interesting to you as it did to me.

I was called to the case on Wednesday, July 22nd, 1890, during our summer race-meeting, and on reaching the

* Read before the Illinois State Veterinary Association.

driving park, found that the animal affected was a seven-year-old pacing gelding; record: 2.23¼.

I asked for and obtained the following history of the case from his owner. He had been started in his first race of the season at Bloomington, during the first week in July; the following week was in a hard contested race at Springfield, after which he went a trifle lame in the near hind leg; the next week he was in Decatur, but was not started; from Decatur he was shipped to Peoria, arriving here on Sunday, July 19th; on Monday, Tuesday and Wednesday mornings he was jogged for a few miles on the track, but being still slightly lame, his owner concluded to ship him home until fully recovered; but when they started to lead him to the shipping platform, they only got about three hundred yards from the stall, when he was taken so suddenly and violently lame, and seemed to be in such agony, that it was almost impossible to get him back to the stall, where I saw him about half-an-hour later, presenting the following symptoms:—

His general appearance showed at a glance that he was suffering intense pain of a nervous character, there being nervous twitchings, slight clonic spasms of the muscles, holding the near hind leg clear of the floor, but continually moving it in a convulsive, jerky, nervous manner; nostrils dilated, breathing very much accelerated, pulse 85 and weak, temperature 103°, body covered with perspiration.

A close and careful examination of the foot and leg revealed nothing wrong, but on manipulating the hip and thigh, the symptoms were very much aggravated; the poor animal groaning from pain on pressure being brought to bear on those parts, and clonic spasm of the muscles being much more severe. I gave Potassium Bromide, 1 drachm; and also Morph. Sulph., 4 grains, hypodermically; injected a five per cent. solution of Cocaine into the muscles of the hip and thigh, and ordered hot woollen blankets to be applied to the hip. On my return in about two hours, I found him in about the same condition, suffering intensely, sweating profusely, but the body was cold. To satisfy the owner I passed the catheter, and drew off a small quantity of natural-looking urine. I then gave him Potassium Bromide, 1 drachm; Chloral Hydrate, one drachm, and Gelsemium Fl. Ex., 1 drachm; in an hour repeated the Bromide and Gelsemium, and after that every two hours; kept hot blankets to the hip, and used an anodyne liniment: at 10 p.m. he was feeling easier, so I left him in charge of an attendant, with instructions to give two doses of Bromide and Gelsemium during the night.

I saw him next morning about five o'clock, when he was looking and feeling better; he had turned round in his stall during the night, being the first time he had changed his position, but would bear no weight on the affected limb. I continued giving the Bromide and Gelsemium every four or five hours, gradually decreasing the dose as the nervous symptoms disappeared, and on the fifth day discontinued them entirely, and prescribed tonics, as his appetite was very poor.

During this time I had been treating the hip and thigh with hot blankets and anodyne liniments, but as the gluteal muscles began to show signs of becoming atrophied, and the pain still being severe, I applied a blister to the parts. The third day after applying it we led him out of the stall for the first time, but he would scarcely bear any weight on the affected limb, merely touching the toe to the ground. As the owner was anxious to get away, we concluded to try and move him to my hospital, which we did the following night, where he lay down for the first time; he lay down pretty regularly after this, but had to be helped up for several days. I continued giving him tonics for about three weeks before he regained his appetite, and by this time he was not much more than a shadow, but was able to walk out for a little exercise, and from this time on he improved quite rapidly.

The gluteal muscles became very much atrophied, but this I finally overcame by repeated blistering. In about six weeks from the day he was admitted to the hospital, I put him in harness for the first time and drove him a few blocks; after this I gave him regular exercise, and in sixty days from the date of admission I sent him home, all right in every way, except that the gluteal muscles were still slightly atrophied; but I had an opportunity of seeing him again in about six weeks, and at that time they were entirely filled out and had regained their natural appearance.

The other case I saw was during our race-meeting in July, 1891, and occurred in a seven-year trotting gelding, record 2.22¾. He started in a race on Thursday, winning two heats, when darkness came, and the race was postponed; the next day he came out all right, but in scoring down for the first heat he went suddenly lame in the near hind leg—so lame that it was difficult to get him to his stall. He presented the same symptoms in general as the other horse did, but not nearly so severe. I treated him the same as my first case, and in about a week he was sufficiently recovered to be shipped home. — *Journal of Comparative Medicine and Veterinary Archives.*

Editorial.

MALLEIN AS A DIAGNOSTIC AID IN GLANDERS.

THE continued prevalence of glanders, and the serious losses it occasions, especially in large studs of horses in our chief cities, is doubtless due to several causes, the principal of which is, of course, imperfect legislation imperfectly carried out, and the difficulty in some cases in diagnosing the disease, the suspected or unsuspected animals being at the time contagiferous. The legislative measures necessary in dealing with such a scourge we have already commented upon, and our object in referring again to the disorder is to suggest experiments with mallein, in order to test its value as a re-agent in suspected cases. If it possesses the property attributed to it by several eminent veterinary authorities on the Continent, then such a trial should certainly be made.

We do not forget, in offering this suggestion, that in certain doubtful cases recourse may be made to inoculation of the ass, dog, or guinea-pig, with matter from them; but then, in other suspected horses there is nothing to inoculate with, and even the material obtained from an enlarged, extirpated submaxillary gland is not always to be relied upon, as it has been found that in a moiety of cases of chronic glanders that body does not possess any virulence. When the lungs are alone the seat of disease, there are no certain indications as to the nature of the affection, even if clinical observation discovers them to be amiss, while the animal may be quite capable of infecting others. Such cases have occurred in our own experience, and doubtless in that of many other practitioners who have had to combat with this troublesome malady.

It would appear that in mallein we have an agent that allows us to recognise with, it is said, great precision, those cases of glanders usually designated as latent, and in which the existence of the disease may not even have been suspected. We have already described mallein as a glycerin extract from cultivations of the glander bacillus, first employed with this object by two Russian veterinarians—Kölning, of Dorpat, and Hellemann, of St. Petersburg, the latter of whom perished from the disease—who proved its specific action. Since then it has been experimented with by other members of the profession, and the last to report success has been Nocard, who testifies to its utility in strong terms, and describes having

employed it successfully in cases which could not otherwise have been diagnosed. The instances he adduces are certainly good evidence of its value, and if it prove as serviceable in the hands of others, the sooner it comes into general use the better. Certain precautions have to be observed in the preparation of the fluid and its inoculation, which we will refer to at an early opportunity. In the meantime it may be mentioned that Nocard inoculated forty-eight horses, thirty-four of which gave the reaction, and were subsequently found to be glandered, while in the others the temperature did not rise to any appreciable extent except in six, but yet in these it was much lower than in the affected ones. The mallein, of course, must be prepared in a laboratory; but there does not appear to be much difficulty attending its preparation.

A NEW METHOD IN THERAPEUTICS.

At a recent meeting of the Académie des Sciences, Paris, MM. Brown-Séquard and d'Arsonval read a paper on subcutaneous and intra-venous injections of liquids extracted from divers animal organs, as a new therapeutic method by which the blood can receive ingredients which are otherwise lacking to it through the failure or absence of the glands and other organs which ordinarily supply them. M. Brown-Séquard as early as 1869 threw out the idea that all the glands furnish useful principles to the blood, which are wanting to it when from one cause to another they fail to act in a proper manner or have been removed from the body. The same idea has now been extended to other organs of the body, non-glandular; and experiment has shown that the function of the organ can in a measure be imitated by hypodermic injections of a liquid prepared from the same organ in a healthy animal. In order to be a practical success the injections must be free from danger, and hence the liquid has to be carefully prepared. At first the authors found that death resulted fron the simple injections of liquids made from the brain, muscles, lungs, kidneys, and so on. The evil has in some cases been traced to the Seine water, especially when unboiled and unfiltered. The danger has, however, been removed by sterilizing the liquid with carbonic acid at a high pressure and the aluminium filter of M. d'Arsonval. In this way liquids extracted from all the glands, nervous centres, muscles, and so on, can be injected in large quantities without any bad effect under the skin of hares and guinea-pigs. So far as their experiments go, such liquids are equally safe in the case of human beings. M. Gley has already shown that the ablation of the thyroid gland in the case of a dog was followed by a complex morbid state, and speedy death would have ensued but for intra-venous injections of the animal fluid from a healthy thyroid gland of another dog or a sheep. In a few minutes the convulsions ceased, the breathing became normal, and the dog rose and walked about. There is no doubt that the injection supplied to the blood a secretion which the proper organ of the animal itself failed to do. Drs. Murray, Beatty, and others have ameliorated diseases caused by failure of the thyroid action with injections from the thyroid of a sheep. It has long been known that the supra-renal capsules are essential to life, and in Addison's disease they are either altered or destroyed. There is, therefore, good ground for hoping that this malady will henceforth cease to be always fatal if these

injections are employed. Experiments show that animals dying through ablation of the supra-renal capsules can be kept alive by subcutaneous injections of the juice of healthy capsules.

DOCKING OF HORSES' TAILS.

AT the monthly meeting of the Royal Agricultural Society, held at Warwick on June 22nd, the Duke of WESTMINSTER gave notice of the following motion :— "That in future no foals should be entered for the Society's Country Meetings with docked tails." He said it was rather cruel to dock the tails of young foals which spent a couple of years at grass, as they had no means of keeping off flies.

Mr. GARRETT TAYLOR said there was now considerable difficulty in their being allowed to do anything in the way of marking or docking horses. Even marking sheep was considered to be a cruelty. If foals or horses were to be docked at all, there was less cruelty in doing so whilst they were young, and they were then also less likely to be taken notice of. Those breeds which were valuable generally found some shelter.

Mr. MUNTZ, M.P., said if animals were docked at all it should be done whilst they were foals.

The Earl of COVENTRY said it was very cruel to dock foals. For two or three summers they were at grass, and without tails had no protection against flies.

H.R.H. Prince CHRISTIAN raised the question of the necessity of docking horses' tails at all. He thought it excessively ugly.

THE BACILLUS OF DIPHTHERIA.*

BY J. BRADFORD MC CONNELL, M.D., PROFESSOR OF PATHOLOGY, UNIVERSITY OF BISHOP'S COLLEGE, MONTREAL.

IN no department of pathology are such advances being made as are to be noted in that of Bacteriology. The generally accepted belief that all infectious diseases originate from some micro-organism is being constantly confirmed by the discovery of one after another of the specific causes, and even our knowledge of diseases which were not suspected to depend on such bodies is being illumined by evidence discovering them as important factors in their evolution. These discoveries are placing the practice of medicine on a more scientific basis and point to rational methods of dealing with this class of disease, which constitutes nine-tenths of those we have to deal with, and we now behold the dawn of the period when empiricism will be replaced by effectual dealing, by true scientific means, with this class of diseases. The work of Loeffler in regard to the specific cause of diphtheria can only be considered slightly less in importance than that of Koch in regard to chorea and tuberculosis.

The disease Diphtheria, under various appellations, has been recognised by observers in early historic times and through the centuries of the Christian era. *Ulcus Egriacus and Ulcus Egyptiacium* are among the names by which it was designated. Its first recorded appearance in America was during the 17th century, about the year 1659. It is mostly a disease of childhood, and is one attended with a considerable mortality when it is not arrested by efficient and prompt treatment. It is almost constantly present in this and other large cities. Its contagiousness has long been recognised, the most liable to it

* Read before the Montreal Microscopical Society.

being those not in sound health and suffering from catarrhal affections of the throat and nose. The infectious material may be conveyed in various articles of food or clothing, and articles of furniture and the like which have come in contact with the patient. The disease may develop in from twelve hours to one or two weeks after exposure to the contagion.

The characteristic feature of the disease is the development of a pseudo-membrane on the mucous membrane of the body, usually on that of the sides and back of the pharynx, and also on wounds and abrasions. The membranous deposit is chiefly fibrinous exudation and changed epithelium, leucocytes, and a great variety of micro-organisms.

There is fever, prostration, and swelling of tissues and glands in the throat region. The patches—small at first—increase in size, and where a number exist or coalesce may be only on one side and extend later to the other. Sometimes it extends down to the larynx, constituting one of the most fatal diseases to which children are liable—diphtheritic croup—and may extend even into the bronchial tubes. The affection may last two or three days or a week or two. One attack does not apparently engender immunity from subsequent ones—in some cases increases the liability to the disease, owing to the abnormal condition of the throat which results. In a certain proportion of cases during convalescence paralysis of various groups of muscles occurs.

Until recently, Diphtheria has been considered by most observers to be a constitutional disease, and the membrane a local manifestation. Others have regarded the local exudation as the beginning of the attack, the constitutional symptoms being a secondary event, and it is only within the last year or two since the establishment by numerous observers of the undoubted causal relation of the Bacillus discovered by Klebs in 1883, and Loeffler in 1884, that the latter view is generally accepted as the correct one.

I will endeavour to state very briefly what is known of the bacillus, and indicate the improved position we now occupy through this knowledge in regard to the nature of the disease, and to offering more rational and effectual indications for combating its depredations.

Although first recognised in 1883 by Klebs, Loeffler in the year following gave the results of his extensive investigations, which were carried out according to modern methods, and declared his bacillus to be the cause of diphtheria, and his statements have been confirmed and amplified by numerous competent observers, and there is now no doubt but that Loeffler's bacillus is the true cause of diphtheria. K. Fraenkel thus describes it:—"They are rods of moderate size, usually slightly bent, about as long as the tubercle bacillus ($1\frac{1}{2}$ to $3\frac{1}{2}$ micro mm.), but twice as broad, with rounded ends. The form is very variable. They sometimes appear enveloped in a glassy membrane. Sometimes the contents separate into several pieces, divided by a broad, transverse wall. One end of the rod is frequently thickened like a club; these are regarded as involution forms. The bacilli do not produce spores; they are semi-anærobic, and only thrive at a temperature between 20° and 40° C. Ten minutes' exposure to 58° C. (136·47) destroys it. The dried membrane is found to contain live bacilli months after. They endure much longer in moist surroundings. On gelatine plates they produce roundish, white, small colonies, which do not liquify the gelatine. The colonies on agar or glycerine agar are of greyish white lustre, with a flat border, and show a ring-shaped stratification. They are not apparent until after forty-eight hours in the incubator, and each successive cultivation on agar lessens in virulence. In gelatine culture small, white, round globules are formed along the inoculation puncture.

A thick, whitish, opaque coating appears on blood serum or on Loeffler's serum, and appear in about twenty-four hours after inoculation. This is characteristic of this bacillus, most others developing later. In bouillon the

bacilli form white, very small, firmly cohering, peculiarly gritty grains, which generally sink to the bottom. The bacilli also grow in milk, and form an invisible growth on the potato. These cultures may be extended through a number of formations, still retaining their pathogenic properties. Several species of animals are susceptible to the action of this bacillus, such as rabbits and guinea-pigs, and most birds, especially chickens and pigeons. Pseudo-membranes are produced at the point of inoculation, followed by grave general symptoms and the death of the animals. Rabbits live longer than guinea-pigs, and the paralysis which occurs in the human patient at a time when he has apparently recovered, follows, when death is delayed in rabbits. The disease produced in these animals is thus identical with that occurring in the human subject, and can be produced in them as well by a distinct culture of the bacillus as by inoculation with the original exudation from the diphtheritic throat. The bacilli are only found at the point where the throat or other region is primarily infected. They only grow on the superficial parts of the false membrane, and do not penetrate into the tissues, so that neither the blood or any of the internal organs at any time harbour the bacillus. Hence the severe constitutional symptoms are not the result of bacterial growth in blood or tissues, but are produced by highly poisonous tox-albumins, which are produced from the tissues by the chemical action of the growing bacilli, which enter the blood current and lymphatic circulation, poisoning the system generally. Roux and Yersin have been able to produce in animals all the usual symptoms of diphtheria by infecting them with bouillon in which the bacilli have grown for same time, and from which they have been removed by filtrations: 1-5th mgm. of the dried filtrate is sufficient to kill a rabbit. More recently, the active poisonous ingredient of the bouillon has been separated. The addition of acidulated alcohol to a concentrated portion of its filtrate throws down a precipitate, which after purification appears as a snow-white mass, having all the virulent properties of the original filtered bouillon culture. It has the characters of the albuminous bodies rather than that of a ptomaine or animal alkaloid, is soluble in water, and destroyed when exposed to a temperature of from 60° to 70° C.

Doubtless, this potent poison—which is said to resemble the venom of poisonous reptiles—is produced when the bacilli develop on the mucous membranes of man or animals. The poison immediately destroys the epithelium and superficial portion of the mucous membrane by a process of coagulative necrosis forming the fragile false membrane; the bacilli being found only on the outer older portion.

Another established point in regard to the bacilli is the fact that the virulence is greatly modified in artificial cultures, and they are found to be especially liable to natural attenuation, so that cultures may be obtained of various degrees of potency, as judged by their action on animals. This accords with the well-observed fact of different shades of severity in the symptoms in various epidemics. It has been proved that the more grave the attack the more virulent are the bacilli, and that the degree of virulence corresponds with the greater or less amount of tox-albumin generated, and it has been found that at the end of an attack, when the patient is recovering, the bacilli are less virulent.

One reason why Loeffler's work was not sooner accepted has been the fact that several other organisms have been described as the specific germ in diphtheria—a bacterium, and a streptococcus (the latter by Oertel in 1871): and from the fact that a great variety of organisms may come in contact with the false membrane from its exposed position to germs from the air; it is supposed also that some of the illness and local action may be due to the growth of the pyrogenic streptococci and staphylococci, always present, and which have the power of growing in the blood and tissues. Moreover, there

are certain cases (as in the membranous sore-throat of scarlatina and measles) of false membranes occurring without the presence of Loeffler's bacillus. The constant presence of streptococci in these has led some observers quite recently to regard them as the specific germs, as in the case of Dr. Prudden's investigations. He has more recently, however, found Loeffler's bacillus in all cases of genuine diphtheria. Some observers have found a bacillus possessing all the characters of Loeffler's bacillus, but without its pathogenic properties. We have already spoken of the variability in the effects of the genuine bacillus, and some authorities regard this one as an attenuated Bac. Diph.

We might now sum up. What has been gained by the discovery of this bacillus? It has settled the point as to the local origin of the disease, and thus the rational necessity of early and energetic local antiseptic treatment, although the grave toxic effects on the general system of the poison generated still calls for constitutional treatment. It has given us a method of deciding in doubtful cases within twenty-four hours as to whether a patch on the throat is diphtheria, or *follicular tonsillitis*, or otherwise.

It points out that the disease is spread through the secretions from the false membrane only, not from the breath, unless portions of infected mucous or saliva, or detached particles of membrane are ejected during expiration, nor from the other excretions of the body. It teaches the necessity of care and the thorough disinfection of all articles coming in contact with the patient, and the danger incurred in regard to subsequent cases of infection in the same house even months after, owing to the longevity of the bacilli, especially where dampness and want of light and dry, pure air prevail.

The fact that it is so easily cultivated on artificial media is evidence as to the possibility of its being harboured where organic filth and refuse are allowed to accumulate around human habitations, and explains why in large cities, when it once gains a foothold, it is with so much difficulty eradicated—in fact, seldom is. In our city it is more or less constantly with us. That a temperature of 50° C. (122° F.) destroys the growing bacilli shows how readily clothing and utensils can be disinfected by dry heat or boiling.

The danger of allowing children who have suffered from an attack of diphtheria to attend school again without thorough disinfection of clothing and person is very obvious; and the fact that the bacilli have been found in the throat from one to four weeks after recovery points to the danger of children mingling with others as soon as the membrane has disappeared, and the patient supposed to be convalescent from the attack.

As the bacilli grow luxuriantly in milk, we can readily understand the grave possibilities of milk being distributed from dairies where a case of diphtheria may exist, and the necessity of proper inspection of these sources of food-supply. The use of antiseptic lozenges and inhalations by those exposed to the disease would seem in this affection to be commended as preventatives, and the patient should be isolated from all but the immediate attendants.

Although animals may be inoculated with human diphtheria, they are never affected by it in natural conditions. The epidemics of a disease resembling diphtheria in calves, pigeons, turkeys, and chickens is a different disease from that caused by the Loeffler bacillus, and the micro-organisms found in these cases is not the same in the different animals, so that human beings are not likely to get diphtheria from these sources, although there are those who maintain that human beings may contract diphtheria from fowls. Thus Bild states that on the island of Skiathus, N.E. of Greece, there had been no diphtheria for a third of a century, when a dozen turkeys were introduced from Salonica, two of them having on arrival a disease resembling diphtheria, which destroyed nine of them. Diphtheria began in a house near where the animals were kept, and resulted in one hundred and twenty-seven cases with thirty-six deaths, and there are many reports of a similar nature.

But in the case of cats, nnmerous instances are on record showing that cats infected from human beings can convey the disease to others. Bruce Low mentions a case where a boy communicated the disease to his pet cat. A second cat received the contagion from this one and communicated it to four children. Similar instances are mentioned by Duthill, Nicati, Oertel, Gerhardt, Velpean, and others, so that it may be considered established that animals affected with diphtheria may convey it to human beings; but doubtless only that species of false membrane affections which contains Loeffler's bacillus—as all false membranes in the human subjects are not evidence of genuine diphtheria—the same fact may apply to animals; so that the diagnostic nature of Loeffler's bacillus can be appealed to in these cases, and show when danger really threatens from other sources. There are many other points of interest which this subject suggests, but which could only be properly presented before a medical society. I have, however, presented sufficient evidence to convince you that a great stride has been made in our knowledge of this formidable disease, and that we are in a much better position to cope with it and lessen its destructive effects.

ACTINOMYCOSIS OF THE HUMAN FOOT.

In a communication to the *Lancet*, Mr. R. T. Hewlett, M.B., demonstrator of Bacteriology in King's College, London, gives the result of his investigation into the nature of what has long been known to Surgeons in India and elsewhere in the East, as "Madura Foot," and comes to the conclusion that it is Actinomycosis.

In 1886, Dr. Vandyke Carter drew attention to the close resemblance between mycetoma (Madura disease) and actinomycosis, in their clinical and pathological characters and microscopical appearances. With regard to the latter, he says: "This resemblance obtains as regards both dimensions and form of the granular central body, with its ray-like envelope and exudation-cell surroundings; and incidental differences apart, it is so distinct that for my own part I cannot but infer that in these two instances at least the foreign bodies must be of an approximate character. There are no other structures I am aware of in the whole range of pathological histology which could compare so closely as these two; and in ordinary scrutinies, with like conforming results, the inference would be as just intimated . . . I am disposed to conclude that one form of actinomycosis presents a morbid structure which is nearly homologous to that characterising a frequent variety of mycetoma." In the same year at the Pathological Society, in a discussion on a paper by Dr. T. Acland on actinomycosis, Dr. Bristowe expressed the opinion that similar appearances were met with in actinomycosis and Madura disease.

Bassini, in 1888, examined a case of Madura foot and, though he failed to recognise the true nature of the disease, the description which he gave, as Baumgarten pointed out, at once recalls to mind the pathology of actinomycosis. In January last, Mr. Kanthack exhibited specimens of Madura disease of hand and foot at the Pathological Society, and is reported to have stated that the Madura disease was undoubtedly due to a fungus, and that this fungus was identical in its staining reactions with actinomyces. In May last Dr. Curnow received a specimen of Madura font from Surgeon-Major Hatch, I.M.S., and presented it to Professor Crookshank, who asked Mr. Hewlett to examine it by the modern methods used for actinomycosis. The disease occupied the whole of the foot and the lower third of the leg. The foot was enlarged, the bones softened and carious, and small abscess cavities were scattered through the tissues and communicated with the surface by several sinuses, the external

openings of which had raised and thickened margins. There were other small cavities containing many fine yellowish particles, the so-called roe-like granules, and hence the specimen belongs to what has been described as the pale variety of Madura disease. The raised margin of a sinus was removed and sections prepared from it. In the unstained condition the appearances were characteristic. Scattered through the sections were yellowish bodies varying somewhat in size, and frequently of a more or less reniform shape and occurring in groups of three or four or more. These bodies were somewhat granular, had distinct margins, and were surrounded by an indistinct, radiating structure, beyond which again were round cells, the whole being enclosed in a distinct fibrous capsule. The appearances in stained specimens were conclusive as to the nature of the fungus. By the method of Gram, the so-called "fairy-rings" of the fungus were occupied by a central network of fine, branching, inter-lacing filaments stained blue, but the club-shaped bodies were unstained. By staining with orange-rubin, however, typical clubs could be demonstrated at the periphery.

No doubt the presence of a network of filaments and the apparent absence of the club-shaped bodies have been the causes of hesitation in fully recognising the identity of actinomycosis hominis (including Madura disease) and actinomycosis bovis. As Professor Crookshank demonstrated at the International Congress of Hygiene last summer, the actinomyces is a pleomorphic organism; in cattle the clubs are almost invariably well-marked and readily stained by Gram's method, while there is a central area which as a rule remains unstained. In man the reverse of this is the case. These two extremes, however, are connected by intermediate forms; in cattle the filamentous network, so characteristic of the disease in man, occasionally appears. In the disease in man the clubs can usually be demonstrated in sections by special methods of staining (orange-rubin, &c.), but especially by examining the fungi in the fresh state.

Mr. Kanthack is reported to have stated that actinomycosis bovis cannot be stained by Gram's method, unless the saponaceous and calcareous matter be first removed. This, however, is not the case, brilliant results being obtained by Gram's method without preliminary treatment when clubs only are present, and in the rarer bovine cases in which filaments and clubs are found. The microscopical appearances in Madura disease, both in the stained and unstained conditions, are then identical with those in actinomycosis; clinically and pathologically the diseases resemble each other closely and there can no longer be any hesitation in accepting the view first put forward by Dr. Carter, that Madura disease is a manifestation of actinomycosis in man. Professor Crookshank concurs in this opinion.

NEUMANN'S TREATISE ON THE PARASITES AND PARASITIC DISEASES OF THE DOMESTICATED ANIMALS.

NEUMANN'S classical work on the parasites of the domesticated animals, in its English form, has met with a very flattering reception from the Agricultural, Scientific, and Medical press, and has been most favourably commented upon. Among others, the *Lancet*, which has done so much to arouse medical men to recognition of the importance of comparative pathology, in its issue for July 2nd, gives the following opinion of its merits, which we gratefully acknowledge as a tribute to the great skill, learning, and industry of our esteemed French colleague:—

"Helminthology, in common with every department of science bearing on the practice of medicine, has of late years undergone enormous expansion;

so much so that it is quite impossible for the medical man, with so many other things to attend to, to keep abreast with its progress. A competent knowledge even of the comparatively small department of the science which has immediate reference to man himself, is possessed by very few, and anything like a fair knowledge of comparative helminthology by fewer still. Yet medical science is daily becoming more and more the study of parasites and comparative pathology, and is daily being more and more drawn on to illuminate and advance human pathology. The appearance, therefore, of an important work of reference dealing with questions of comparative pathology is a matter of interest to the medical, as well as to any other profession to which it may happen to be more especially addressed. Neumann's work is of this character, and it is not too much to say that the distinguished author and, in a secondary degree, his translator have placed the medical profession under very heavy obligations.

"Neumann arranges his subject, not on strictly zoological, but rather on anatomical and pathological principles. This, we are sure, will be found a very great practical convenience. Such a plan enables the comparatively uninitiated observer to identify species very readily and with certainty, and—guided by the copious bibliography, which is practically complete—to find out all that is known about any given parasite. Further, by bringing similar forms of helminthiasis in different species into close contrast, a fuller and more philosophical grasp of any given helminthological problem is quickly obtained.

"In carrying out this plan, the author divides his subject into the Parasites of the Skin, the Parasites of the Digestive Apparatus, the Parasites of the Serous Membranes, and so forth. So that a student, wishing to identify a parasite which he may have found or is submitted to him, has only to turn to the chapter on the particular part of the body from which the parasite came, to learn all about it, or to find out where to get fuller information. Thus, suppose we are concerned with a distom from the lungs of an ox, we turn to the chapter on the Parasites of the Respiratory Apparatus, Article II., where, under the heading Distomatosis, we find not only an account of the distoms of the ox's lungs, but an account of the distomatoses of the lungs of other domesticated animals, and in footnotes references to the entire literature of the subject. The chapter on the Acariases of the domesticated animals is particularly full and well done, and the section on the dermatomycoses is particularly interesting to medical men.

"Subjects having a special bearing on human pathology, such as coccidosis, trichinosis, hydatid disease, &c., are admirably handled, and to the human pathologist are of very special interest. In these and other chapters it will be found that many interesting and valuable side lights are thrown on questions of human pathology. We do not hesitate to say that this is a work which all pathologists ought to possess; and the practitioner, especially the country practitioner, who is so often looked on as encyclopædian in his knowledge of physical science, will not fail to add to his reputation if he has this book on his shelves and uses it.

"Dr. Fleming, although himself well qualified to write a work on the parasitology of the domestic animals, has, with rare modesty, preferred the task of translator to that of author. It is unnecessary to say that he has performed his self-imposed task with complete success, besides contributing many original notes which will be found interpolated here and there throughout the text. Veterinary surgeons already owe much to Dr. Fleming; by the present work their debt, as well as ours, is still further increased."

The more strictly scientific opinion of the work is given in the *International Journal of Microscopy and Natural Science* for July, 1892, in which, at the termination of a long notice, the reviewer states that "Professor Neumann's

work must become the classic authority on the subject of parasitic diseases, and the numerous additions by the editor and translator, Dr. Fleming, renders this the most valuable book of reference to the scientific enquirer that has appeared in the English language.

Among the many favourable notices which have appeared in the agricultural press, may be mentioned that of the *Journal of the Royal Agricultural Society of England* for June 30th. This remarks that "Parasitism, with the diseases incident thereon, affords an almost limitless field for study, and is steadily attracting an increasing number of specialists within its domains. The appearance in English dress of the well-known treatise of Neumann may be taken as an indication of the growing interest manifested in the subject in this country, whilst the presence of Dr. Fleming's distinguished name upon the title page is an unquestionable guarantee of the care which has been bestowed upon the difficult task of translation and annotation," for, concluding a lengthy review, the article concludes as follows: "By his translation of this masterly work, Dr. Fleming has been enabled to fill an obvious void in English technical literature. Whilst Spencer Cobbold, Andrew Murray, and other writers have left behind them useful treatises on one or another branch of the subject, there is no work that can approach that of Neumann either in comprehensiveness or in completeness. There is reason to believe that the distinguished honorary member of our Society, the translator and annotator of Neumann, entertains the very highest opinion of the author's work. Probably there is no other treatise of the kind, not even in human medicine, which can approach it; so that it is certain to benefit in a high degree both agricultural and veterinary science. It is capable of giving a great impetus to the study of helminthology and allied subjects in all English-speaking countries, and may thus aid in the extinction of parasitic diseases in man and beast. All who seek information upon the subject of parasitism, whether lay readers or professional, will therefore welcome the appearance of this English edition. It adds one more to the many obligations under which Dr. Fleming has placed students, practitioners, and general readers, who are already indebted to him for his well-known works on Veterinary Obstetrics, Operative Veterinary Surgery, Animal Plague, Roaring in Horses, and other subjects, besides his invaluable translation of Chauveau's "Comparative Anatomy of the Domesticated Animals."

THE VIENNA VETERINARY INSTITUTE.

We are much gratified to learn that our esteemed and accomplished colleague, Dr. Joseph Bayer, has been appointed Director of the Imperial Veterinary Institute at Vienna, and we congratulate him on attaining this high and well-merited position.

VETERINARY HONOURS.

Dr. Fleming, C.B., has been elected an Honorary Fellow and Member of Council of the College of State Medicine. At a Court of the Worshipful Company of Farriers, held on June 24th, a resolution was unanimously passed to the effect "That the Honorary Freedom of the Company be conferred on Dr. Fleming, C.B., in recognition of his valuable services on the Registration Committee." This distinction was formally conferred on July 7th.

THE LAW AGAINST RABIES IN THE GRAND DUCHY OF BADEN.

In the *Thierärztliche Mittheilungen* of the Grand Duchy of Baden for 1891, we learn that the number of dogs registered was 26,266 males and 8,939 females, or about one of the latter to three of the former ; and the amount of the dog-tax for that year was 362,264 marks, or £181,134 4s. Since 1885 there has only been one case of rabies in the Duchy, and the dog which was so attacked came from Metz.

In other countries in 1889, the number of cases of rabies was as follows :—

Belgium	234
France	1,291
England	312
Italy	10
Roumania	18
Switzerland	6

In the same period in Austria-Hungary, rabies was reported in 437 localities.

THE FREQUENCY OF BOVINE TUBERCULOSIS IN SWITZERLAND.

According to the *Schweitzer Archiv. für Thierheilkunde* for 1891, a number of Cattle Insurance Societies have been instituted in the Fribourg Canton, and the number of animals insured has been 14,142, valued at 4.759,975 francs, or £190,399. Of these cattle 239 died, or 1·69 per cent., which might be considered as a somewhat normal proportion. Of these 21, or 8·7 per cent. were due to tuberculosis. In the Greyer district, which is chiefly pastoral, there were 5,165 cattle insured, and of these 101 died, but only three were tuberculous, while in the Broye district there were 3,181 insured, 43 deaths, 9 of which, or 21 per cent., were from tuberculosis. Strebel, who furnishes this report, remarks that robust, well-fed animals resist the disease much better than those which are weakly and not so well nourished, as is the case in certain parts of Switzerland.

THE PRESERVATION OF THE VIRUS OF CONTAGIOUS PLEURO-PNEUMONIA.

In countries where protective inoculation for bovine contagious pleuro-pneumonia is practised, much difficulty is often experienced in keeping the inoculating material or "Virus" in a proper condition for any length of time. Professor Nocard has lately pointed out that the aspiration of this fluid into sealed capillary tubes is an excellent means of preserving it in an active state for a long period; but this method is always troublesome, and the quantity collected is very small. Practically, it may be collected and preserved with all its virulence, for a long time, by the following procedure :—

An intact hepatised lung, as fresh as possible, is taken, its surface is washed with water which has been boiled, and then a deep, conical cavity is cut in it; this cavity is protected from dust by an inverted saucer or plate. The retraction of the lung causes a large quantity of serum to exude from the sides of the cavity, and this acccumulates in the latter, and can be drawn from it by means of a pipette which has been previously rinsed in water that has been boiled. To one volume of serosity so obtained is to be added one-half volume of carbolised water (5 per 1,000), and one-half volume of pure and neutral

glycerine. This mixture is filtered through filtering paper, and is kept in a well-stoppered bottle in a dark place.

At a meeting of the Paris Central Veterinary Society, Nocard exhibited a quantity of virus so prepared, and which had been kept for several months; it was then in a state of admirable preservation, and M. Mollereau had, after repeatedly testing it by hypodermic injection at the extremity of the tail, satisfied himself as to its potency. For seven weeks and two-and-a-half months it had remained so active, that in some instances the tail had to be amputated in consequence of the swelling induced by its inoculation.

POISONING OF CATTLE BY THE NITRATE OF SODA.

In the *Journal de Med. Vétérinaire*, of Lyons, for May, M. Benard reports the poisoning of two cows by nitrate of soda. It appears that he had steeped in water some of the thick sacks in which this substance is imported from Chili for agricultural purposes, in order to remove what remained of it in these receptacles. During the absence of the man who was washing them, two cows drank of the water, and sixteen hours afterwards one of them died suddenly without having shown any symptoms of illness. Forty hours after this occurrence, the other cow succumbed. The sudden death of these two cattle gave rise to suspicion of anthrax, although all the animals on the farm had been "vaccinated." An autopsy was made, however, and no evidence of that disease could be found, but there was an extraordinary quantity of water in the digestive organs, which seemed to indicate that after drinking the nitrate of soda solution they had been seized with great thirst, and drank enormously.

INOCULATION FOR THE PREVENTION OF HOG CHOLERA IN THE UNITED STATES OF AMERICA.

For a considerable time experiments on a somewhat large scale have been made in America, with the view of protecting swine from the plague which threatens to destroy the porcine race in every country in which it has appeared. Inoculations have been practised in various parts of the States, with virus prepared by Mr. Billings, of the Nebraska University; but according to the report presented in a *Farmers' Bulletin* by Dr. Salmon, Chief of the Bureau of Animal Industry, the success attending it has been much less than was anticipated. Dr. Salmon indeed asserts, from the facts he presents in the *Bulletin*, "that inoculation is a very dangerous operation, and that the protection from it is, at best, uncertain, and in many cases entirely wanting." With regard to the cost of inoculation, he also demonstrates that to prevent the loss occasioned by inoculation, would require more than three times the amount to be saved. It would appear that the mortality from inoculation was over ten per cent., not to mention the retardation in growth in many of the inoculated herds.

THE PHOSPHATE OF LIME IN RICKETS.

Munckenbeck reports in the *Wochenschrift für Thierheilkunde* for January of this year, that in the district of Marktbreit, Bavaria, Rhachitis is very prevalent among young pigs, and that he has advantageously administered to them from 40 to 50 grammes of crude phosphate of lime daily in their food, and given for a long time. He has also obtained excellent results from the same treatment in the case of calves similarly affected.

NAPHTALIN IN DIARRHŒA AND DYSENTERY.

As Naphtalin has been very serviceable in human medicine in combating diarrhœa and dysentery, in the form of enema, the *Clinica Veterinaria* for June recommends it for the same diseases in the domesticated animals, in the following prescriptions, and administered in the same manner :—

For the Horse or Ox.

Pure Naphtalin	15 grammes.
Olive Oil	200 ,,
Water	1,000 ,,

For the Calf.

Pure Naphtalin	5 grammes.
Olive Oil	50 ,,
Water	500 ,,

For the Dog.

Pure Naphtalin	1 gramme.
Olive Oil	30 grammes.
Water	250 ,,

WORM-INFECTED SHEEP IN QUEENSLAND.

Results of Important Experiments.

EARLY in October last, the Chief Inspector of Stock, at the suggestion of a number of sheepowners in Queensland, applied for permission to employ Mr. James Irving, M.R.C.V.S., to test a number of specifics on worm-infected sheep, and after inquiry, the application was approved by the Colonial Secretary. Two lots of sheep were obtained, numbering fifteen in each lot. They were obtained from the Darling Downs, and were known to be badly affected with worms. The experiments were carried out at the Indooroopilly quarantine station, the Chief Inspector being present during a part of the time. Mr. Gordon, in forwarding the report to the Colonial Secretary, describes the *post-mortem* examination which was made as being most careful and thorough, the stomachs and intestines throughout, as well as the lungs and bronchial passages being examined. In the ordinary course, concludes Mr. Gordon, he would have added the report to his usual annual report to Parliament, but as many sheepowners are anxiously looking forward to the results of the experiments, he has forwarded it direct to the Minister, who has given it to the Press for publication. Mr. Irving says :—

On the 30th March I made a *post-mortem* examination of a sheep—one of fifteen sheep sent from the Darling Downs to the Indooroopilly quarantine grounds for experimental purposes. This sheep had a considerable number of thread worms (*Strongylus Contortus*) in the fourth stomach (Abomasum), and was also affected by a nodular disease of the intestines, which I will hereafter describe. On the 1st April I administered six different remedies to twelve sheep—namely :—Nos. 1 and 2, solution of arsenic; Nos. 3 and 4, turpentine mixture; Nos. 5 and 6, Hayward's mixture; Nos. 7 and 8, cocoanut oil; Nos. 9 and 10, powder supplied by Dr. Thos. L. Bancroft; Nos. 11 and 12, salt and lime. The remaining two sheep, Nos. 13 and 14, were kept as control animals, and did not receive any medicine. No. 3 sheep died shortly after receiving the drench from the effects of the turpentine, a little of which had

got into the windpipe. A *post-mortem* examination of this sheep was made directly after, when it was found that the fourth stomach was free from worms, and only a few thread worms were found in the small intestine. On the 10th April the sheep numbered 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, received similar doses of medicine to those administered on the 1st April. On the 21st and 22nd April *post-mortem* examinations were made of the thirteen sheep, for particulars of which please see the accompanying table, which shows on the left side the medicines administered and on the right the effects as revealed by careful *post-mortem* examination. On the 26th April, a fresh batch of fifteen sheep were drenched—numbers 1, 2, 3, with liquor arsenicalis; 4, 5, 6, satonine and gentian root; 7, 8, 9, lime and salt; 10, 11, 12, Hayward's mixture; 13, 14, 15, were kept as control animals and did not receive any medicine. No. 5 sheep died on 27th April. This sheep was a very sickly-looking animal when alive, the lips and nose being swollen, and wool dropping off its body. *Post-mortem* examination revealed thread and tape worms, and extensive nodular disease of intestines. The remaining fourteen sheep were destroyed on 3rd May, and *post-mortem* examinations made. For results please see the aforementioned table. So far as these experiments have gone the preparation of arsenic has given the best results; it is the cleanest and most easily administered, as there is only one fluid ounce in a dose, and the sheep drink it readily. The other remedies being more or less nauseous the animals have a decided objection to swallowing them, and this is a matter of consideration where hundreds of sheep have to be drenched. You will notice by the subjoined table that sheep Nos. 1, 2, and 3 of the second batch only received one dose of medicine, and on *post-mortem* examination showed more worms than did sheep numbers 1 and 2 of first batch, which received two doses of medicine. I do not consider that one dose will be of much avail, and would recommend that three doses should be given at intervals of nine days between each dose. The sheep to be kept without food for at least twelve hours before a dose, and for two hours after; they may be allowed water half-an-hour after receiving the medicine. You will notice that nearly all of these sheep were more or less affected with a nodular disease of the intestines. I am told that this disease has been noticed by sheepbreeders at various times during the last twelve years in the Darling Downs district. Mr. Charles J. Vyner, M.R.C.V.S., reports having investigated this disease in the Armidale district, and says that it also affects sheep pastured throughout the eastern part of New South Wales. It has been known for some years in the southern and eastern States of the United States of America, and previous to the winter of 1888–89 it was known as a disease which is characterised by tumours present in the upper part of the large intestine. The disease causes heavy losses, for it seriously affects the health of sheep, and renders the intestine valueless for sausage casings. Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, says he believes this malady is the chief obstacle to successful sheep husbandry in some portions of the Southern States. Since 1889 this disease is known as the nodular disease of the intestines of sheep, and caused by a nematode or round worm (*Œsophagostoma columbianum*, Curtice), which, though remarkably similar to some other worms of its group, is nevertheless of a distinct species. The adult worm is found in the large intestine of sheep in considerable numbers, and the embryo in the tumours or nodules in the walls of the intestine. These tumours are most abundant about the cæcum or bung, although in some cases they are distributed throughout both the small and large intestines. The small tumours, which are scarcely the size of a pinhead, are found in the submucous tissue. They appear like a sac filled with fluid and having a little globe floating within. By using magnifying power the little globe is seen to be a cyst, with a worm enclosed. By careful dissection the cyst may be separated, and finally the

worm itself may be separated. When the little tumours become larger than a pinhead and entirely filled with the cheesy matter, their structure does not materially change, but is more difficult to make out. It is at this stage that the worm escapes from the cyst, and begins to wander within the capsule which its presence in the tissue has caused. On dissecting the large fresh tumours, the worm is found in the mass of cheesy material, which is now quite abundant, filling the cavity and producing tumours as large as the end of one's finger. This cheesy material is usually hard, dry, and brown at one end, and soft, yellowish-green at the other. It is in this end that the worm is to be found. If some of the harder tumours are examined it may be found that there is no greenish material in them and no worms. These hard tumours may be of all sizes, and are found at all times. From these the worm has either escaped, or in the case of the smaller tumours the worms have died. The form of these tumours is usually spherical, but the cheesy material may appear as a long mass, or it may apparently fill what seems to have been a worm track. The last appearance occurs most often in the small intestines. From the mucous side these tumours present little if any colour. The older ones may present a greenish-yellow appearance, especially if the mucous membranes over them be thin. In well-advanced cases, when the tumours are numerous and large, many are found in which the mucous membrane over them is ruptured, and the cheesy mass protrudes into the intestinal cavity. In these no worms have been found and hence the conclusion has been reached that the worms have escaped. The cheesy material which the worms produce has been found in the lymphatics, on the omentum, and in the liver, but in these places it never seems to be sufficiently abundant to show that the parasite lived long. The diagnosis of this parasitic disease can only be made from a *post-mortem* examination. In the living sheep there may be signs of general debility—bloodless lips and eyes, thin sides and flanks, dry wool, etc. It may be that nothing else will be noticed but that the flock is not in quite good condition, or in severe cases the diarrhœa or emaciation may be excessive. As the adult worms are comparatively few as compared with the tumours, it is probable that the adults of this species cause but little trouble; but the embryos, on the contrary, cause a great deal. The disease is an insidious one, for not only is the rate of infection gradual, increasing slowly in amount from week to week, but the rate of development of the tumours is very slow, apparently requiring months. It is only when the disease is well advanced that its cumulative effects can be noticed. The disturbance of digestion caused by this parasite is mainly dne to the derangement of the functions of the cæcum. This derangement is not serious until the resulting tumours become exceedingly numerous, well-advanced in growth, and press upon the more essential mucous membrane, disturbing its functions. For the tumours caused by *Œsophagostoma columbianum* there is no remedy except the removal and extermination of the adult worms. These adults are usually buried deeply in the mucous secretions and attached to the membrane of the large intestine. They may be found in considerable numbers in older sheep. The medicinal remedy must therefore be one which will remove them from these places. It is probable that some one of the surer remedies used for other intestinal parasites will do for these. The killing of the adults will of course lessen the number of eggs with which the sheep become infected. As the eggs of this parasite pass to the ground the sheep may get them while pasturing or drinking. The same care in changing pastures, in providing good drinking water and a plentiful supply of salt, should be observed as for other parasites. If pastures are known to be permanently infected, then they should be turned over to other stock for a year or two before being again grazed on by sheep."

The following is a digest of the information contained in the table appended to the report. In the case of No. 1 to No. 14, inclusive, the remedy was first administered on 1st April, and with the remainder it was not given till the 26th of that month.

No. 15 (30th March). Two-tooth.—This sheep was destroyed for *post-mortem* examination. *Post-mortem* appearances: Abomasum (fourth stomach) contained large quantity of thread worms—strongylus contortus—thread worms in small intestines, and creamy white round worms in large intestines. The whole of the intestines, particularly the large, affected by nodules containing yellow and greenish-yellow cheesy matter, the contents of some being quite dry, hard and gritty.

No. 1. Weaner.—Dose: Liquor arsenicalis half fluid ounce, equal to 2 grains of arsenic, water half a fluid ounce; dose repeated 10th April. Killed 21st April: Lungs, liver, abomasum and small intestines free; large intestines, one creamy white round worm; nodular disease of intestines, very slight.

No. 2. Two-tooth.—Same treatment as No. 1. Killed 10th April: Organs free, except a few cream-white worms in large intestines, and nodular disease extensive.

No. 3. Two-tooth.—Turpentine 1 oz., linseed oil 2 ozs., milk 3 ozs. This sheep died immediately after: Thread worms in small intestines, other organs free; slight nodular disease.

No. 4. Two-tooth.—Dose: same as No. 3; repeated on 10th April. Killed 21st April: Thread worms in abomasum; thread and tape worms in small intestines; few cream-white worms in large intestines; extensive nodular disease.

No. 5. Two-tooth.—Dose: Hayward's mixture 2 ozs. of a 1-in-50 watery solution; repeated 10th April. Killed 21st April: Thread worms in abomasum; few thread and tape worms in small intestines; few cream-white worms in large intestines; slight nodular disease.

No. 6. Weaner.—Treatment: Same as No. 5. Killed 21st April: Few thread worms in abomasum; six or seven tape worms in small intestines; few cream-white worms in large intestines; extensive nodular disease.

No. 7. Two-tooth.—Dose: Cocoanut oil 2 ozs.; repeated on 10th April. Killed 22nd April: Organs free except a few thread worms in the small intestines; few cream-white worms in large intestines; extensive nodular disease.

No. 8. Weaner.—Same treatment as No. 7, with same doses. Killed 22nd April: Thread worms in abomasum; tape worms in small intestines; plenty of creamy white worms in large intestines; extensive nodular disease.

Nos. 9 and 10. Weaner Ewe.—Dose: Dr. T. L. Bancroft's powder, night and morning, followed by dose of castor oil next day; doses repeated on 10th and 11th April. Killed 22nd April: Abomasum free; few thread worms small intestines; few in large intestines of No. 9, No. 10 free; extensive nodular disease.

Nos. 11 and 12. Two-tooth Ewes.—Dose: One and a-half tablespoonsful of salt, half teaspoonful lime, water five fluid ounces; repeated on 10th April. Killed 22nd April: Abomasum free; thread and tape worms in small intestines of No. 11, and thread worms in small intestines of No. 12; few creamy white worms in large intestines of both; extensive nodular disease.

Nos. 13 and 14. Weaner Ewe and Weaner Wether.—Kept as control animals. Killed on the 22nd: No. 13, very few thread worms in abomasum; ditto in small intestines; very slight nodular disease. No. 14, thread worms plentiful in abomasum; tape worms plentiful in small intestines; plenty of creamy white worms in large intestines; almost free from nodular disease.

Nos. 15, 16, and 17. Weaner Ewes.—Dose: Liquor arsenicalis, water half fluid ounce. No. 15, filaria of the lungs; abomasum free; thread worms in small intestines; creamy white worms in large intestines; extensive nodular

disease. Nos. 16 and 17, organs free; few thread worms in small intestines; few creamy white worms in large intestines; in No. 16 extensive nodular disease, and in No. 17 slight.

No. 18. Weaner Ewe.—Treatment: Santonine 1 drm., powdered gentian root 1 drm., water 3 fluid ozs.; killed 3rd May; organs free; few thread worms in small intestines; few creamy worms large intestines; slight nodular disease.

Nos. 19 and 20. Weaner Wethers.—Same treatment as No. 18. No. 19 killed as on 22nd April; abomasum, thread worms; small intestines thread and tape worms; large intestines creamy white worms and extensive nodular disease. No. 20. Killed 3rd May: Filaria in lungs; abomasum free; small intestines few thread worms; large intestines, few creamy white worms; moderate nodular disease.

Nos. 21 (Weaner Ewe), 22 (Wether), and 23 (Ewe).—Treatment: Lime, half-teaspoonful; salt, one and a-half tablespoonsful; water, four fluid ounces. Killed 3rd May. No. 21: Organs free; abomasum, thread worms; small intestines, thread and tape worms; large intestines, creamy white worms; moderate nodular disease; No. 22: Filaria in lungs; abomasum, thread worms; small intestines, thread worms; large intestines, creamy white worms; extensive nodular disease. No. 23: Filaria in lungs; abomasum, thread worms; small intestines, thread and tape worms; large intestines, creamy white worms; extensive nodular disease.

No. 24. Weaner Wether.—Dose: Hayward's mixture two fluid ounces of a 1 in 50 watery solution. Killed 3rd May: Organs free; abomasum, thread worms; small intestines, thread worms; large intestines, creamy white worms; extensive nodular disease.

Nos. 25 and 26. Weaner Ewes.—Same treatment as No. 24. Killed on 23rd May: Organs free. No. 25: Abomasum, thread worms; small intestines, thread and tape worms; large intestines, few creamy white worms; slight nodular disease. No. 26: Abomasum free; organs free; small intestines, thread worms; large intestines, few creamy white worms; extensive nodular disease.

Nos. 27, 28, and 29. Weaner Ewes.—No medicine administered; control animals. Killed 3rd May: Organs free, except No. 29, which had filaria in lungs; abomasum in all three, thread worms; small intestines, thread worms; large intestines, creamy white worms; extensive nodular disease.

A CASE OF CHOLERA IN A DOG.

An instance of what is termed "spontaneous cholera" in a dog, was, according to the *Hygienisch Rundschau*, observed by Professor Ogata, in Tokio, Japan, during an epidemic of that disease in 1890. In addition to the animal presenting all the symptoms of cholera during life, Ogata found at the autopsy the usual signs in the intestines, the comma bacillus in the fæces, and the characteristic reaction of the urine.

HOME DEFENCE.

We are requested to announce that sixty-six civilian veterinary surgeons are required to register their names for employment, in the event of an Army being mobilized for home defence—that is, to serve only in the United Kingdom. Gentlemen wishing to have their names registered are requested to apply to the Director General, Army Veterinary Department, 5, King Street, Westminster, London, S.W. The rates of pay and allowances would not be less than those given to the Officers of the Army Veterinary Department.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

(Concluded from Page 36.)

Farriers' Company Committee.

The PRESIDENT said on looking through the Regulations issued by the Farriers' Company, he found that half the members appointed retired biennially, and that the time was up on the 21st of July next. Perhaps it would be better to wait until the next Council meeting, as he did not think it would be wise a month before to appoint somebody who might then have to retire.

Mr. HUNTING complained that the Council as a body had had no official communication as to the committee.

The PRESIDENT said it was in the scheme.

Mr. THATCHER said the scheme was drawn up in February, 1890, but it did not come into force until July of that year.

Mr. TRIGGER said that probably before the 21st of July they would receive some instructions from the Farriers' Company that certain gentlemen had retired according to the scheme, and were eligible for re-election.

Professor PENBERTHY then moved that the consideration of the matter should be deferred until the next quarterly meeting.

Professor EDGAR seconded the resolution, which was carried.

Conference of Principals, Examiners, and Members of Council.

Mr. HUNTING proposed "That a conference of teachers, examiners, and members of Council be called to consider the arrangement of the professional examination, especially as to the number of examinations and the subjects to be examined upon." He said that his motive in moving the resolution was that they had already approved the principle of the four years' scheme, and it now only remained for them to settle the details upon the very best possible basis. He thought that to settle the thing properly and thoroughly they should have all the talent they could possibly get, by asking the co-operation of the teachers of the schools and of the examiners.

Mr. TRIGGER said he should like to know if it was proposed that the gentlemen should be paid their expenses for attending.

The PRESIDENT said that was not so; they were merely to be asked to attend. The conference, it was proposed, should be held in London.

Mr. JAMES SIMPSON seconded the resolution, desiring that the schools should be consulted in every possible way.

Professor EDGAR proposed as an amendment that each school should be represented by two teachers. It was quite impossible to have all the teachers up, as they would quite swamp the Council in any resolution that they desired to move. He thought the teaching staff of each school might fairly be represented by its principal, and any other representative of the staff of each school that the Council might choose or the principal nominate.

Veterinary-Captain RAYMOND said he quite approved of the motion except in one item, and that was that instead of "teachers" he should like to see "principals" put in, because he had taken a great deal of trouble to endeavour to understand the views of the teachers as represented in the schedule which Mr. Thatcher had prepared. The whole thing was to his mind terribly involved.

Mr. HUNTING said he would gladly alter his resolution in favour of Mr. Raymond's suggestion, and make it read, "That a conference of principals of schools, examiners, and members of Council, &c., &c."

Professor EDGAR moved as an amendment—"That the principal of each school (as a matter of courtesy) and a further representative from the staff of each school, either chosen by the principal or nominated by the Council, be asked to attend."

Mr. TRIGGER seconded the amendment.

The amendment was put and lost, and Mr. Hunting's original motion as amended was then put and carried unanimously.

Petitions against Charter.

The PRESIDENT said the next business was to consider the answers to be sent in to the Privy Council, in regard to a petition against the charter of Professors McCall and Williams, and a further memorandum from Sir H. Simpson.

The following is the joint petition of Professors McCall and Williams.

"Unto the Queen's Most Excellent Majesty in Council. The petition of James McCall, F.R.C.V.S., Principal of the Veterinary College, Glasgow, and William Williams, F.R.C.V.S., Principal of the New Veterinary College, Edinburgh, most humbly showeth:

"That your petitioners are actively engaged in the supervision and administration of two large veterinary educational institutions, viz., the Veterinary College, Glasgow, founded in 1863, which is fully equipped for teaching veterinary medicine and surgery, and has been attended by students from all parts of the world, the average number attending the classes being 100. The staff consists of the principal, who is professor of veterinary medicine and surgery applied to the horse, ox, and other domesticated animals; a professor of anatomy, a professor of physiology, a professor of histology and morbid anatomy, a professor of materia medica, therapeutics, and pharmacy, a professor of botany, a professor of chemistry, and toxicology, besides demonstrators and assistants; and the New Veterinary College, Edinburgh, founded in 1873, which is also fully equipped for teaching veterinary medicine and surgery, and has been largely attended by students from all parts of the world, the average number attending the classes during the nineteen years since its foundation being 132·58. The staff consists of the principal, who is professor of veterinary medicine and surgery as applied to other domesticated animals, a professor of pathology and morbid anatomy, a professor of materia medica and therapeutics, a professor of chemistry, practical chemistry, and toxicology, a professor of anatomy and comparative anatomy, a professor of physiology and histology, a professor of botany and applied natural history, besides demonstrators and assistants.

"That the Council of the Royal College of Veterinary Surgeons have petitioned your Majesty, humbly praying that your Majesty would be pleased to grant to the said Royal College a Supplemental Charter.

"That it is understood that the said Council propose to make certain rules and regulations for the instruction and examination of veterinary students, and for their admission to the veterinary profession.

"That the rules and regulations which it is understood the said Council propose as aforesaid are, in the opinion of your petitioners, such as will make the terms of admission to the veterinary profession unduly onerous, and will tend to the detriment of the public, in unduly limiting the supply of adequately qualified veterinary practitioners as well as to the detriment of the existing veterinary schools.

"That in matters affecting the terms of admission to a public profession, it is not desirable that the power of fixing these terms should be wholly left

to any purely professional council, however distinguished may be the individual members thereof; but that it is desirable that your Majesty should reserve the power of approval or disapproval of any rules or regulations proposed to be made as aforesaid, and that after full hearing to your Majesty in Council of any representations which any parties interested may desire to make.

"Your petitioners therefore most humbly pray that a clause be added to the proposed Supplementary Charter directing that any rules and regulations proposed to be made by the Council of the Royal College of Veterinary Surgeons, and affecting the terms of admission to the veterinary profession, should be laid before your Majesty for your approval, and should be open for a certain time to objections and amendments to be presented to your Majesty in Council by any parties desirous of stating such objections thereto, or craving such amendments thereof, and should thereafter receive your Majesty's approval, subject to such amendments as your Majesty in Council may be pleased to direct.

"And your petitioners will ever pray.

(Signed) "JAMES MCCALL, F.R.C.V.S.,
"Veterinary College, Glasgow.
(Signed) "W. WILLIAMS, F.R.C.V.S., &c.,
"New Veterinary College, Edinburgh."

The answer to the above, which the Solicitor had drawn up, and which was submitted to the Council for approval, was as follows:—"In answer to the statements that the Royal College of Veterinary Surgeons propose to make certain rules and regulations for the instruction and examination of veterinary students, and for their admission to the veterinary profession, the Council state that it is correct that the question of study and examination is now and has for a long time past been in course of consideration, but up to the present time no definite alterations have been agreed on.

"It is, to say the least, premature to assume, as the petitioners appear to do, that the rules and regulations which it is understood the Council propose to make as aforesaid are in the opinion of the petitioners such as will make the terms of admission to the veterinary profession unduly onerous, and will tend to the detriment of the public in unduly limiting the supply of adequately qualified veterinary practitioners as well as to the detriment of the existing veterinary schools, and the Council beg to repeat that up to the present time no definite propositions on the subject have been agreed upon. The Council have the interests of the profession at heart, and have no wish to enact such terms as would be injurious or detrimental to the public, and especially any such as would be detrimental to the existing veterinary schools.

"The present position of the matter is as follows:—The Council referred the whole question of study and examination to the Examination Committee, which consists of all the members of Council; they in turn referred the matter to a sub-committee, who have reported that conditions as to matriculation should be the same as are adopted by the Medical Council, and that the course of study and examination should be four years instead of three as at present. These recommendations have been adopted, but the details of the scheme of study have been referred back to the sub-committee; they have prepared a scheme, parts of which have been sent to every member of Council, to all the examiners, and to every professor and teacher at all the schools, with an invitation for criticism and remarks; and, in addition to this, the Council have arranged for a conference to take place between the members of Council, the Principals of schools, and the examiners, in order that the whole matter may be thoroughly discussed, and a result arrived at to the best interests of the public, the profession and the schools. It is part of the pro-

position that any new regulations are not to come into force for three years, and are not to affect students entering before that time.

"In answer to the prayer of the petition that a clause should be added to the proposed supplemental Charter, directing that any rules and regulations proposed to be made by the Council of the Royal College of Veterinary Surgeons and affecting the terms of admission to the veterinary profession should be laid before Her Majesty for approval, and should be open for a certain time to objections and amendments to be presented to Her Majesty in Council by any parties desirous of stating such objections thereto or craving such amendments thereof, and should thereafter receive Her Majesty's approval, subject to such amendments as Her Majesty in Council might be pleased to direct; the Council respectfully urge that ever since the granting of the Charter of 1884 to the present time the College has had the exclusive right of making rules and regulations and bye-laws for all purposes connected with the College, including those relating to the examination and admission of students, and that during the whole of that period such rules as made by them have been found to work well, or if not have been altered with all convenient dispatch. There are four schools, viz.—the Royal Veterinary College, London (founded in 1791 and incorporated in 1875), the Royal Veterinary College, Edinburgh (founded in 1823), the New Veterinary College, Edinburgh, and the Veterinary College, Glasgow, as stated in the petition. All the Principals of the schools are at present members of Council, so that no scheme detrimental to their schools could be carried through without their having the opportunity of being heard upon it. The Principals are all men of high standing in their profession, and any opinion of theirs, especially on the question of education or admission to the profession, is invariably listened to by the members of Council with great deference and respect. The Council feel that such a clause as is asked for by the petition would most materially abridge their power without any corresponding benefit to anyone, and would inflict an undeserved slight upon the whole profession. The petitioners have not ventured to adduce any single instance in the whole of the forty-eight years of the existence of the Royal College in which such an abridgment of their power would have been beneficent in the slightest degree.

"The Council are not aware of any corresponding clause in the Charter of any other profession; and although they are willing to concede that such a restriction would be most useful for the protection of the public in the case of trading monopolies, such as railway, gas, or water companies, yet, that in this instance, where the public are not directly interested, it can serve no good purpose, but would only tend to cripple and hinder the Council in introducing reform from time to time which circumstances might render necessary."

The PRESIDENT said that perhaps some gentleman would move that the reply as drawn up by the solicitors be approved.

Mr. MASON. I shall be very glad to do that.

Mr. WRAGG. And I will second it.

The resolution was agreed to.

The PRESIDENT said Mr. Thatcher would read the answer to Sir H. Simpson's letter.

The following is a copy of the further memorandum of Sir Henry Simpson's, *re* Supplemental Charter:—

"The Lords of Her Majesty's Privy Council having intimated that they will consider any statement I may desire to submit, I beg to call attention to the petition of the Royal College, and the absence of any valid reason given for altering the ninth clause of the Charter of 1876.

"(Petition, Article 6.) To consider an examinership a paid office is derogatory to that honourable position; many, like myself, are willing to serve without the honorarium hitherto paid, which barely covers out-of-pocket expenses.

"There is no bar in other professions to a member of Council being an examiner.

"Of an Examining Board of twenty-two members not more than ten members of Council have ever officiated at one time as examiners, and the statement that examiners are generally selected from the members of Council appears inconsistent with facts.

"(Petition, Article 2.) Although not opposing the change prayed for, I beg to point out that no good reason is shown for it, and that no inconvenience can arise from a President and Vice-President being elected by the Council as at present (in the same way that county aldermen are elected); and in proof of this I may state that in May, 1891, a President was elected who was not a member of Council, and who never had been returned as a member of Council by popular vote.

"(My protest, dated Feb., 1892.) The Royal College, by their answer delivered on the 6th of April, do not deny that if the Charter is granted the Council may be composed in part of men of less than five years' standing in the profession, and without practical experience; whereas at present a member of Council must be twenty-six years of age, and must have been five years in practice, and must pass the Fellowship degree.

"The existing practitioners, the Royal Agricultural Society of England, and the Royal Commission on Horse Breeding, have confidence in the Council as now constituted; and the two last-named bodies have adopted resolutions of the Council during the last three years connected with horse breeding, knowing they were passed by a board of practical men; while 300 veterinary surgeons on Register No. 3 desire that no one of less experience than five years shall be on the Council to frame rules for professional conduct, &c. (My memorandum, April 8th.) The Royal College, by their answer dated April 20th, 1892, do not deny my statements:

"(1) That all professions give to the holders of a higher degree privileges with their rank.

"(2) That the risk of excluding men of superior education and status from the profession is great if rank does not confer the privilege of being a member of the governing body.

"(3) That the Council is now asking for what was never voted upon by the profession, in answer to Mr. Mulvey's inquiry which they quote and rely upon.

"I desire to add a few comments upon what has been stated by the Royal College in their answers.

Answer dated April 6th.

"The existing practitioners have a right to a tribunal, such as was contemplated when the Veterinary Surgeons' Act, 1881, was passed, viz., a governing body for ever after 1886, as provided for by the Charter of 1876. They would have had a binding clause inserted in the last Act had it been supposed the Council would execute such a retrograde movement as is now contemplated.

"A copy of the petition was not sent to Veterinary Surgeons' Register No. 3, nor was any explanatory note as to the necessity or desirability of the contemplated alterations sent to the members and Fellows of the College; nor was any request made for objections to be sent for consideration of the Council. It is true the monopoly of their being the class from which examiners are taken is reserved to the Fellows, but that of itself is not sufficient; and what is more, the promoters of the Supplemental Charter sought to take away this privilege, and were only defeated on a division by a small majority. I have not asked for a return of my fees, but I object to these fees being spent by a Council composed of men who did not contribute to the Fellowship Fund, and who may desire therefrom to pay themselves fees for attendance as members of Council.

"(Answer dated April 20th.) I applied by letter to the Solicitor, and through him to the President of the College, for the latter to use his influence to obtain a conference. I applied by letter to the President and Council, and attended personally and appealed for a conference and the payment of out-of-pocket expenses to those who were protesting.

"No vote was taken, nor has any decision of the Council in answer to my letter and appeal ever been communicated to me, except a copy of the answer to the Privy Council, which does not deal with the request for payment of out-of-pocket expenses.

"I spoke of Mr. Hunting's having nominees for Council because he 'named or designated' certain persons in his weekly journal in 1891 and 1892. It is a fact that for the election just concluded Mr. Hunting 'named or designated' certain persons, and Mr. Mulvey, his colleague, officially nominated the eight gentlemen who were elected.

"In the Charter of 1844 it is provided that the Council may make bye-laws, &c., for the appointment of persons to examine and determine upon the fitness and qualifications of students, and Bye-law 21 provides that not less than six examiners shall be members of the College, and it appeared to me that the Council had it in its power to enact by bye-law that members of Council should not be examiners without a Supplemental Charter being necessary for the purpose. Power to make such a bye-law, with power for all bye-laws to be approved by the Privy Council, would meet the case, and I find that such power is vested in the Privy Council in other chartered bodies.

"My proposal 1 (*b*) has not to my knowledge during eleven years' consecutive service on the Council, ever been submitted to the Council. It appears a fair compromise if the Privy Council will not retain 1 (*a*).

"(6) I have alluded to the first paragraph already. The second paragraph would work well, as instance: members of a town Council who are shareholders in a gas company who would not vote on questions relating to the gas company.

"(8) I have already alluded to this, but I think it most necessary.

"(9) The answer is misleading. The audited accounts for this year show that a contribution has been made for a specific purpose, and that it is kept separate and apart from the general fund in the balance-sheet, and therefore my proposal is fair and reasonable.

"(10) The Council has full power to dispose of its property (by Charter, 1844,) as it shall think proper. No one would object to a restraining hand being placed on this power who desires that payment shall not be made to members of Council for their services.

"(11) A clause by which those who have held or now hold appointments as members of Council and examiner jointly, shall not be affected by any change the Privy Council may direct by Charter to be made with regard to the examinership (if any).

"The Council passed the following resolution on the 20th of April, but it does not appear in their answer to the Privy Council, nor has it been communicated to those who protested:—'The Council considers that such protests should have been lodged within the time limited by the official advertisement. Subject to the foregoing paragraph, the Council desire that their answer to the protest of Sir Henry Simpson may be taken as the answer to these protests. Subject to paragraph 1 the Council do not object to the gentlemen protesting being heard personally or by representatives before the proper Committee of the Privy Council, provided the Council are also allowed to be represented on the same occasion.'

"I have applied to the Solicitor to know whether it is intended thereby to pay the expenses of the protestors if they appear by Council, to which application I have received a reply that my letter will be laid before a meeting of

Council in July. I regret that my remarks are not so concise as I could wish, but I am busily engaged, and can only snatch a few moments occasionally to devote to this subject. I have, by resignation, ceased to be a member of Council.

(Signed) "HENRY SIMPSON.

"Gordon House, Windsor.
"*May 20th*, 1892."

Mr. THATCHER (Solicitor) said he had prepared an alternate reply, but he would read the short one first, which was as follows:—"The Council have fully considered and discussed the memorandum, but are of opinion that the whole of the statements and arguments are already fully set forth in their petition and former answers; and they are prepared to support these by evidence and argument before any committee that their lordships may be pleased to appoint. They must not be taken to admit any of the statements made by Sir Henry Simpson in the said memorandum, or the inferences he deduces from them; on the contrary, they are willing that he should put them to the proof, both by evidence and argument, in the manner above indicated. The Council decline to pay the expenses of Sir Henry Simpson or any other person in reference to the opposition of the Charter, as they are of opinion that such opposition should never have been made. The Council respectfully beg your lordships to appoint an early day for the matter to be determined, either before a committee of your lordships or in such other way as to your lordships may seem most expedient."

The PRESIDENT asked if the members approved of that short reply, or should the other be read.

Mr. HUNTING thoroughly approved of the short reply.

Mr. TRIGGER moved that the reply as now read by the Solicitor be approved by the Council and sent.

Mr. MASON seconded.

Veterinary-Captain RAYMOND asked if the Solicitor thought the answer was full enough.

Mr. THATCHER (Solicitor) said he could answer the memorandum point by point, but if this sort of thing went on there would be no end to it. He thought the best way was to bring the matter to an issue.

Mr. TRIGGER's resolution was carried.

Re-insertions on the Register.

Mr. WRAGG moved that the names of Messrs. Rugg and Selfe should be re-inserted on the Register, as they had complied with the regulations and paid the fees for restoration.

Professor PENBERTHY seconded the resolution, which was carried.

Date of Conference.

Mr. HUNTING inquired as to the date of the proposed conference.

The PRESIDENT suggested as the most convenient course that the Secretary should write to each one of the Principals, and ask when it would be most convenient for them to meet the Council and examiners.

Mr. HUNTING thought that they might also be asked whether it would suit their convenience that it should be either the day before or after the quarterly meeting in July.

Veterinary-Captain RAYMOND was of opinion that it should be the day before, as members of Council would be considerably influenced by the information they received from the Principals.

Mr. HUNTING thought that as most of them were near London they might come two days before the Council meeting in order to clear the committees

out of the way, and then the conference could come the day before the quarterly meeting.

The PRESIDENT thought that would do very well, to have the committee meetings two days before the Council meeting, and the conference on the day intervening.

Mr. HUNTING asked the date of the July meeting.

The PRESIDENT said it should be about the 18th.

Mr. HUNTING thought that it was too early, as they would not be able to elect the members for the farriers' registration scheme, because it did not lapse until the 21st of July.

The PRESIDENT said they could elect the committee and let it stand.

On the recommendation of the Registration Committee it was resolved that the seal of the College be affixed to authorities to the Solicitor to prosecute.

The PRESIDENT announced that a letter had been received from Sir Henry Simpson asking that he might have a copy sent to him of any answer which was sent by the Council to the Privy Council to his further letter.

Mr. TRIGGER thought as a matter of courtesy the letter might be sent, and he would move it.

Mr. JAMES SIMPSON seconded the resolution, which was agreed to.

Mr. TRIGGER moved a vote of thanks to the President.

Veterinary-Captain RAYMOND seconded the resolution, which was carried, and the proceedings terminated.

SPECIAL MEETING OF COUNCIL, HELD JUNE 30TH, 1892.

Mr. W. J. Mulvey, President, in the chair.

Present:—Professor Edgar, Veterinary-Colonel Lambert, C.B., Veterinary-Captain Raymond; Messrs. Fraser, Hunting, Hartley, G. Thatcher (Solicitor), A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

Absentees.

The SECRETARY said he had received letters from the following gentlemen regretting their inability to attend the meeting:—Messrs. Donald, Mason, Wheatley, Burnett, Beddard, Oliphant, Taylor, and General Sir Frederick Fitzwygram.

Correspondence.

The following letter from the Privy Council was read:

"To the Secretary of the Royal College of Veterinary Surgeons,

"SIR,—The Lords of the Committee of Council, to whom the question as to the grant of a Supplemental Charter to the Royal College of Veterinary Surgeons has been referred by Her Majesty, have had under their consideration the answers of the College to the allegations of the opponents to the grant of such Charter in its present form; and I am instructed to inform you that, in their Lordships' opinion, no member ought to be eligible to serve on the Council unless he has attained the age of twenty-six years, and shall have *bona fide* practised his profession of veterinary surgeon for not less than five years, or been a professor in a veterinary school. I am to request that you will inform me whether the College would be prepared to accept a Supplemental Charter on this basis.

"I am, Sir,

"Your obedient servant,

"C. L. PEEL."

The PRESIDENT said that the object of calling the Council together was for the purpose of considering what reply should be sent to the Privy Council.

Veterinary-Colonel LAMBERT moved that a reply be sent to the Privy Council accepting the terms contained in the communication which had been read.

Mr. FRASER seconded the motion, which was agreed to.

Veterinary-Colonel LAMBERT said he thought the Privy Council ought to be informed that no one had yet been elected on the Council who had not attained the age of twenty-six years.

Mr. THATCHER said that that had already been done.

The PRESIDENT said that Mr. Thatcher had prepared a reply to be sent to the Privy Council.

On the motion of Professor EDGAR, seconded by Veterinary-Captain RAYMOND, it was resolved that the reply as prepared be taken as read and forwarded to the Privy Council.

Veterinary-Captain RAYMOND moved —"That in the event of the advisers to the Privy Council objecting to the clause in the Charter delegating the authority of the Council to the Registration Committee, Mr. Thatcher be empowered to remove the clause."

Mr. HARTLEY seconded the motion, which was carried.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THIS society held its usual monthly meeting on the 7th July, at the Royal College of Veterinary Surgeons. Mr. W. Roots, the president, presided.

The SECRETARY read the correspondence which included a letter from Professor F. Smith, of Aldershot, who regretted his inability to attend; also a letter from the successful competitor in the anatomical competition, Mr. R. Mulcahy, Cahir, who thanked the society for its award.

Mr. G. C. Lowe, 52, Oxley Street, Dockhead, S.E., was elected a Fellow.

"INTESTINAL OBSTRUCTION IN THE HORSE.

Discussion.

The PRESIDENT said it was very unfortunate that Prof. Smith could not be present to reply to the discussion which might take place on his address concerning "Intestinal Obstruction in the Horse"; but as he would be made acquainted with what was said through the medium of the shorthand writer present, Mr. Roots considered that the discussion should be continued.

Mr. H. W. CATON, in resuming the discussion, said that there seemed to be a great difference of opinion as to how twists arose and, in fact, whether they occurred at all. Professor Smith told them that twists were caused by peristaltic motion. Whether that was so or not he could not say, but he had seen no more plausible theory advanced to account for the phenomenon. He had had the previous week an interesting case of impaction where the animal had not excreted for four days, and he was doubtful whether the horse had a twist or not. He gave the horse—a big cart horse—a seven dram dose of aloes. This not acting within four hours he gave the animal physostigmin 3 grs. and pilocarpin 2 grs. This gave the beast rather a shaking up but yielded very little beneficial results. The horse drank a large quantity of water. He restricted it to half a gallon every two hours. In forty-eight hours from the commencement of the case he had another seven dram dose of physic. That not acting within twelve hours he administered a third dose of physostigmin and pilocarpin. From then the horse showed a tendency towards recovery. Meanwhile every three hours it had enemas. It suffered violent pain, laying

down at full stretch groaning, and getting up and walking round the place occasionally. But it was never violent. It was fed with slop food, oats and linseed—linseed tea with bran. He should have liked to ask Professor Smith it he knew of the best precaution for crib-biting, as a blood mare he had to deal with would persist in this habit, do what he could with a view of preventing her. Professor Smith said that worms were a cause of bowel trouble. The horse which he treated the preceding week had sufficient physic to nauseate the worms and fifty came from it; and he had had a case in which 400 came from a horse. What he wished to know was how many worms would cause impaction. As to symptoms, Professor Smith said that the horses were not always violent. There were scores of cases of strangulated intestine which were never off their legs. A paper read by Professor Pritchard four or five years ago showed the fallacy of the theory of rolling as a cause of twisted intestine. Fifty instances of twisted intestine were adduced in which the animals were never off their legs. In his own experience he knew of scores of cases where the horses never laid down until they died; and he was convinced that rolling had nothing to do with the strangulation of the intestine. In the majority of instances death occurred speedily, Professor Smith said, but he had known a case last five days. He regarded physostigmin and pilocarpin as invaluable if properly applied, and he did not believe in hypodermic injection into the system if the dose could be administered directly into the venous system. He had never heard whether physostigmin and pilocarpin affected the heart. He differed from Professor Smith as to the reliability of the pulse. His experience in this was contrary to that of Professor Smith. As to rectal exploration he never derived much benefit from that. Professor Smith did not believe in the beneficial effects of opium. Ammonia balls he (Mr. Caton) found had a sedative effect. Professor Smith thought that in all bowel cases the quickest way to work was to resort to aloes. That might be so in the army, not in private practice; this remedy was not as suitable where it was desirable to get the horses to work again as soon as possible. With sedatives and anti-spasmodics the pain was frequently quickly relieved and the animal could resume work the next day. In big firms with many horses it would not do to lose the animals' services for three days by physicking them. According to Professor Smith, the best anodyne was Indian hemp or chloral hydrate, and he (Mr. Caton) wished to know what dose of these he would prescribe. Professor Smith had not much faith in oil, but he (Mr. Caton) had administered good doses of oil with, he believed, beneficial effects. As to the long rectum tube, he should like to know its length and composition and whether there was any special tube made for the purpose. He supposed that the tube was made of India-rubber or gutta-percha. Would an ordinary Reed's tube with a knob end answer the desired purpose? Professor Smith described an elaborate arrangement he had devised or brought into use for extending the œsephagus of a horse and allowing the animal to vomit. In many instances horses were muddled about or killed in a vain attempt to relieve them by pouring something down their throats which they could not retain, and much of which had lodged in the trachea and produced inflammation. He knew of a case in which a horse got a large quantity of liquor down its trachea, an acute attack of pneumonia supervened, and the animal died within twenty-four hours. With regard to surgical treatment in cases of twist he did not think that surgical operations proved of much avail.

Mr. F. G. SAMSON said he should like to know in what class of horse the bowels were impacted most. His belief was that this was most frequent in heavy draught horses and that it arose because those horses were fed right up to the moment of their going to work and directly they returned from work, that he thought, was a prolific cause of colic. Horses should be fed some hours before they went out. Hunters were so fed and it was a well-known

fact that they were scarcely ever seized with gripes or colic. When these horses returned to the stable some time elapsed before they were permitted to feed to any extent. Professor Smith stated that sub-acute cases of obstruction proved fatal within three or four days, but he (Mr. Samson) had known such cases continue six or seven days and some had recovered while others died. He had had very little success with physostigmin. He had tried it, but only one out of twenty-three cases had recovered. As to the administration of aloes in cases of colic he thought that that was very good treatment combined with opium, but, as Mr. Caton pointed out, this treatment would not do in general practice where it was needful to get the horse to work again as quickly as possible. He frequently used chloral hydrate as anodyne. There was no fear of causing constipation with that: it had a very marked and quick effect. He had only used Indian hemp twice, and did not find it had much effect. He administered it in two to three ounces. In cases of gripes and colic he strongly advocated the use of hot rugs after first two hours. He believed that many cases were saved by the constant and persevering application of hot water—as hot as the animal could bear. If the water were not sufficientiy hot, and the blanket was not kept close up to the horse's abdomen, and the abdomen well-covered, the remedy was apt to fail. When he was in Norway a veterinary surgeon, who had a large practice, recommended the use in colic of nothing but physostigmun and pilocarpin injections per rectum. Professor Smith spoke well of the use of the long tube, but although he (Mr. Samson) was partial to the use of injections given slowly and carefully, he did not like pumping a lot of water into the horse's inside. Personally he had not tried the long tube, but others, he believed, had used it with good effect. With respect to water-drinking he knew of many horses which were allowed to drink their fill immediately they returned from work, and no injurious effects followed.

Mr. H. G. Rogers, speaking of impaction of the bowel, expressed his belief that this was a secondary condition in many instances. He recognised two causes contributing to impaction, first a sluggish liver, which was occasionally found in old horses which were rested. They showed yellow membranes and other symptoms of sluggishness of the liver, inactivity of the bowels, and accumulation of fæces in the large intestine followed. Secondly, defective teeth, causing imperfect mastication of rough forage was very often, he thought, accountable for the condition which they spoke of as impaction of the colon. This was brought before him rather forcibly in a recent case under his treatment. After the horse had recovered two days he was watching it feed, and, making a close examination, he found the animal had very defective molars, the beast chewing on one side, and its food was constantly quidded. These conditions seemed to be connected with the impaction. With regard to impaction of the colon, he thought it was pretty easily recognised. He thought that they seldom had acute pain. He did not speak of cases where the colon overlapped or twisted, but of cases of impaction, cases which generally lasted some time, and did not often terminate fatally. As to twist of the small bowel, he thought that that was shown by the intense pain the animal suffered and the rapid termination of the cases. Professor Smith mentioned length of time and, in this connection, he (Mr. Rogers) referred to a case of impaction of the colon which came under his notice last Christmas, where no passage of fæces occurred for ten days; and, notwithstanding this, the horse was alive and at work. He was rather sceptical as to the condition called "twist." In abdominal cases if they watched the knackers method of opening the animal, they would find that as soon as he put the knife through the abdominal walls, he said "Twist, sir." And, perhaps, some of them did not go farther. If they did, the result might not be very satisfactory when they had the bowels taken out. The knacker threw them on the pavement,

and if they asked him where "he" considered the twist was he would say "there," and he (Mr. Rogers) was fain to confess that he, in many instances, could not trace the *post-mortem* appearance presented before him as twist. Concerning treatment, he thought it very unfortunate that they seemed to have only one purgative for a horse. Aloes was very effectual no doubt, but it was a nauseating drug. But it seemed to him that where the bowel was distended and in a semi-paralysed condition, it was somewhat dangerous to dose the horse with a large amount of aloes which produced violent contraction of the muscular coats of the bowels. In such a case it seemed best to combine it with hyocyamus or extract of belladonna, which did not limit its purgative action, while it somewhat neutralised its tendency to produce these violent and rapid contractions of the bowel. With respect to oil he had, in his experience, generally found it a pretty safe agent to use; and he had administered it in considerable quantities. What he devoted particular attention to was the frequent giving of enemas. He gave them often; and, if there was no passage at all, by clearing away the back portion, they seemed to induce action of the bowel further up. Concerning opium, he fully confirmed Professor Smith, when he pointed out that if they gave that drug in large doses they produced a state of delirium, and the animal became wholly uncontrollable. Then such treatment was certainly dangerous. It was difficult to distinguish between the effects of the pain from the spasm and the effects of a large dose of opium or morphia. If they examined these cases carefully they generally found the pupils of the eye contracted.

Mr. A. PRUDAMES said he had known cases in which worms had caused complete obstruction of the bowels. In other cases he believed that they were the secondary if not the primary cause. Again, many cases of both colic and impaction were due simply to indigestion, and if the teeth were out of order, that would be a direct cause of indigestion. Then there was improper food, as well as food given in improper quantities at improper times. It was wrong to give a horse a large quantity of food immediately it returned home tired from work, and was not in a fit condition properly to digest it. In many instances he held that ordinary sedative treatment would prove of very great service, even without the use of aloes. If aloes were used, and he frequently employed them, he followed them with sedatives or an hypodermic injection of morphia. He believed that small flints raked up in harvest found their way into horses' food and caused death from bowel disease sooner or later. The long rectum tube he deemed very useful. He was in the habit of using Reed's ordinary stomach pump, which he had found very effective. He, too, was sceptical as to rolling being so accountable for so-called cases of twist. He mentioned that, both in the cases of horses and dogs, he had found it very useful, in giving a stimulant to the muscular coat of the bowels, to administer a stimulant in the form of strychnine.

Professor MACQUEEN said he regretted that he was not present to hear Professor Smith's address, but taking it as it was reported, the first objection he (Professor Macqueen) had to take, was with reference to the causes. In his enumeration of causes of abdominal pain or intestinal obstruction, Professor Smith failed to mention some very important causes. There was one, for example, which he had often met with—intussusception of the small bowel. That Professor Smith did not name at all. He had found telescoping of the small intestine varying in length from a few inches to sixteen feet, one portion of the small intestine passing into another, sometimes making a double, sometimes a treble fold. That was a form of obstruction which, in many cases, was not a perfect obstruction, but allowed a certain space for food or for the contents to pass on. Then there was another form of obstruction which demanded a little more attention than it usually received, and that was the form of obstruction due to aneurism or dilatation of the branches of the

mesenteric artery. He thought that in many cases where they made *post-mortem* examinations and failed to find any sufficient reason to account for death in any part of the intestine, they would, if they searched more carefully along the divisions of the mesenteric artery, discover a clot or thrombus in some branch. That was a very old subject. It was first of all noticed by Rigot in 1829; it was studied somewhat later, in the year 1831, by Hering, and by Bouley in 1856; but not until 1870, he believed, did it receive the full share of attention it deserved. Bollinger was the first, in 1870, to give a full description, and also to classify the number of cases which occurred. About twelve years ago, his friend, Mr. A. Robinson, jnr., of Greenock—who was, unfortunately, no longer capable of pursuing his profession—had a number of such cases in young stock, in Clydesdales—usually when at grass. In France it was known as pasture colic; and in this country (England) it was more common in animals that were at pasture. He need not enter into a description of how embolus, thrombus, or clot was produced; but no doubt it gave rise to muscular stasis of the bowel. The contents remained stagnant and caused a form of intestinal obstruction which was not easily diagnosed. The symptoms were subacute until a certain time was reached, and until that time arrived there was no doubt that the bowel became much swollen from serious infiltration of its layers, and doubtless, too, the symptoms became aggravated a few hours before death. Acute obstruction Professor Smith ascribed to twists, and subacute to impaction with fæces or foreign bodies. Then he said "Acute intestinal obstruction may be determined by the character of the pain, but not always. The pain is generally acute, persistent, and the disease runs a rapid course," and so on. Well, in his experience intestinal obstruction, impaction of the colon, or accumulation of the contents in any portion of the large bowel was not a rapid disease; the symptoms were developed slowly, the pain was subacute, and the horse did not die soon. In a case where the obstruction was due to the presence of a concretion he had known a horse live twenty-one days, pass portions of concretion, recover from the attack, and eventually die in twelve or fifteen months time from similar symptoms. Such cases had occurred, and he did not think they were at all exceptional. Now as to obstruction of the smaller bowel. When obstruction of the small bowel was due to twist, the symptoms were usually acute, and death, he thought, was usually rapid unless relief was given. As to the manner in which the twist was brought about: if one looked at the intestine of a horse—the large or small intestine of a horse which had been knocked down for some other reason, if he watched the intestine lying on the floor, he would see that the bowel did not move in one direction only but moved forward and backward as it were, and also twisted slightly upon its own axis. If they could imagine a case where the intestine of a horse was partly occupied by ingesta in one part, and in another part was empty, the occupied part of the bowel would sink and the lighter part would rise, and in that way, no doubt, twists were often produced. The wonder was why the accident did not oftener occur rather than that it should happen at all. As it appeared to him it was simply an exaggerated action of the bowel and it resulted from irregular peristalsis—not only from the backward or forward motion, but from the twisting motion—from the rotation of the bowel. As to the pulse being a splendid symptom, he placed no reliance upon anything of the kind. The pulse, in some cases, was very useful as a guide when dealing with what they might call inflammation of the bowel; but he did not think that one could risk diagonising a case of abdominal pain in the dark by taking the pulse alone. With regard to rectal exploration he differed from some of the views expressed that evening in thinking that rectal exploration was one of the best methods to which a practitioner could have recourse. There was no better practice going. He was afraid it was not

resorted to so much now as in former times. He knew of instances where if rectal exploration had not been pursued, it was questionable whether the animal would have lived. In cases of concretion, where it was not all soft and yielding, and where a rupture or breakage was liable to ensue from muscular contraction, it sometimes happened that, following the injection by the introduction of the hand, the hand would be able to reach a portion of the calculus and remove it, thus affording the animal relief. Then again in cases of obscure hind lameness rectal exploration should be practised. Under diagnosis Professor Smith made a very strange statement. He said "A horse passes on an average 12 motions in 24 hours, weighing on an average diet 25 lbs.; a man passes one motion daily, often not that. This explains why equine bowel obstruction runs such a rapid course; every day a horse goes without passing dung is equivalent to a man going 12 days." If this statement were applied to the 21 days case he (Professor Macqueen) had mentioned, and a simple calculation made, a rather startling result would be found. Then he went on to say "Enteritis is a rare disease, displacements and twists only too common, more careful *post-mortem* examinations required, all who do so will be convinced of the truth of the statement." Enteritis, he maintained, was not such a rare disease. With all due deference to Professor Smith he had made careful *post-mortem* examinations which had not infrequently revealed enteritis. What was enteritis if it were not simply exudation into the tissues of the bowel? Didn't they find that condition in cases of fatal abdominal pains; didn't they find the bowel thickened. They might say it was a case of apoplexy or of hæmorrhage into the bowel, but it was simply an exudation. He maintained that hæmorrhagic exudation caused death. He did not say that that was the immediate cause of death. In many cases the immediate cause of death was œdema of the lung. Then as the treatment he objected distinctly to the sweeping statement regarding opium made by Professor Smith. He (Professor Macqueen) held that opium was a first class remedy in bowel diseases; and even when used in conjunction with aloes, he maintained that it was still a useful agent. He was taught—and he had yet to learn that this teaching was wrong—that a medicinal agent such as opium had a certain specific action, no matter whether it was administered with aloes or not. And, when they administered two medicines so distinctly opposite in their actions as aloes and opium, he believed (and so did Professor Smith) that "opium acts as a powerful cerebral stimulant." Granted that aloes did not thus act. It acted upon another part altogether. But was it not a common practice in the case of the human subject to administer aloes and opium, and for what purpose? Simply to diminish the griping action of aloes. He did not think it was possible to explain satisfactorily the action of any drug. At the same time they knew that aloes purged when given in suitable doses in suitable cases, and that, combined with aloes, a certain quantity of opium would mitigate the griping action of that drug. That was all he claimed. Some people said that opium was not so good as hyoscyamus or belladonna. He admitted that. Professor Smith believed strongly in chloral hydrate and Indian hemp. Chloral hydrate he had used in protracted cases of abdominal pain and found it produced in the horse a semi-stupid state which required that the animal should rest a day or two before it could be put back to work. Professor Smith said that in all cases it was a safe and sound rule to give every case of violent colic, aloes immediately. Now he differed from Professor Smith on that point. If one diagnosed a twist and contemplated surgical interference later on, would Professor Smith administer aloes to that patient? Was it a case of concretion in the large bowel diagnosed by the hand in the rectum; would Professor Smith administer aloes in that case? Was it a case where diagnosis was not plain, where one was unable to say whether it was a case of twist, of intersusseption, or of

impaction; would it be good practice to administer a strong purgative? He said no. He believed in controlling pain by an anti-spasmodic. It might be wrong in theory if applied to some cases, but at the same time he maintained that it was a most useful practice and, he believed in the administration of anti-spadmodics in cases of abdominal pain. In cases where they suspected impaction of the large bowel, in what might be called constipation, he believed that much benefit was to be derived from the administration of small doses of oil combined with anti-spasmodic treatment. That would keep the animal from being vicious and doing violence to itself. Oil as a rule did well. If they gave the horse a dose of aloes, the chances were they would bring about—possibly hæmorrhage of the bowel, commonly called enteritis. Then as to the rectal tube, he remarked that when they sat at home and thought over their cases as he used to do—he didn't do it now—how they thought they might have treated a case differently if the circumstances were different, and then it was astonishing what a number of little instruments appeared in their mind's eye. The rectal tube was born of some such evening's dream. It was a splendid instrument, no doubt, but in his experience of colic—and he had treated a good many cases of colic—he said that where he found abdominal pain acute or becoming aggravated, the rectal tube would have been difficult to manage. He had had four cases of abdominal pain going on simultaneously, where it was somewhat unsafe to approach the horses. He wondered how Professor Smith would manipulate his rectal tube in those cases. In cases which were not acute and which were easily managed, no doubt the rectal tube was a good thing, but in general practice it was not a practical instrument. He did not, however, object to the rectal tube, and thought that Prof. Smith deserved the thanks of the profession for suggesting the rectal tube, but at the same time it was merely an extension of the old-fashioned instrument. Then as to kneading the bowels, that was a very delicate and dangerous operation. He believed with Mr. Caton that it was dangerous to use too much energy when the hand was in the rectum. Professor Smith said "Washing out the stomach found to be excellent treatment in human practice." Query. Washing out the human stomach was not always found to be excellent practice. Many surgeons found that there were very peculiar symptoms developed when the human stomach was washed out, although they had not been able to explain why those peculiar symptoms occurred as a consequence of washing out the stomach. Doubtless many successful washings had occurred in the human subject, but other cases were not so successful. Now Professor Smith proposed by some patent probang to dilate the cardiac opening of the stomach of the horse and bring about vomiting with the object of relieving obstruction. Well, if a man considered that he could relieve intestinal obstruction by dilating the gullet he hoped that he might succeed. He would be inclined to try his instrument on the very first occasion. At the same time he was conscious that to use such an instrument would present a great many difficulties to the ordinary practitioner. To pass an ordinary probang into a horse required the animal to be cast, and in cases where the horse was in pain, as in most abdominal cases, it would be a very risky thing indeed to introduce such an instrument. As to abdominal section, he commended the efforts which Prof. Smith was making in this direction. The operation of Laparotomy in the horse was successfully performed by Félizet in 1877, for the removal of a concretion from the large intestine. He believed there was some hope for the operation in some cases of concretion, but he feared that abdominal section for the relief of intestinal obstruction from twist, intussusception, and many other causes, would never be a successful operation in the horse.

Colonel F. DUCK spoke of cases of poisoning arising from poisonous food which had come under his notice in Africa, and he described a successful

surgical operation performed by a native upon a mule. Interference with the peritoneum, he had always been taught to believe, would prove fatal, but it was not so in this case.

Professor PRITCHARD said that in his earlier career, in connectiou with the veterinary profession, it fell to his lot to see very many cases of bowel affection, and he could tell them that they would make a post-mortem examination occasionally when there had been a sudden intermission in the bowel in the passage of fæces, and, unless they had been made aware of what it was that was taking place, they would sometimes make their *post-mortem* examination without discovering what was really the cause. In many parts of the body the mucous membrane had the power of selection. That was not a secret which he had to convey to them. What he meant to say was that the mucous membrane which lined or covered certain orifices, had the power of allowing certain material or matter to pass, and had the power of rejecting everything else. The mucous membrane which lined the pylorus of the stomach had a somewhat similar power, but probably not to the same extent, and they would find that the mucous membrane which lined the end of the small intestine, where it entered the cœcumcaput coli had the power of selection, and in some instances a portion of straw would produce the effect. In some instances this mucous membrane refused to allow to pass indigestible material, a spasmodic contraction of the muscular portion of the end of the intestine would take place, close the orifice, and hold the bit of straw, and the result would be, he would not say a case of impaction, but a cessation of the movement of material in the bowels as if a calculus were placed there. This he had seen at least a score of times, and were it not for a little bit of congestion at this particular part of the bowel, and cutting open the bowel and finding this little bit of indigestible material, the *post-mortem* examination would be made without the person making it discovering what had really given rise to the cessation of movement of material along the bowel. He believed with Prof. Macqueen that they got more frequently a twisted condition of the mesentery than a twisted condition or the gut. With regard to inflammation of the bowel he might say this: there was no doubt that it did occur, and occurred far too frequently for the owners of horses and veterinary sugeons who had to treat the horses, but he thoroughly believed this: that when once inflammation of the bowel was set up, the chances of recovery of that animal were very scanty indeed. Medical men said recovery in the human subject was very rare as well as in these cases.

The PRESIDENT spoke of a case of impaction by sand which came under his notice. The animal had half a bushel of sand. It was said that a twist of the small intestine was accompanied by a quick termination, but he had known a twist of the small intestine take three days to kill a horse. What, in his opinion, occasionally gave rise to these cases of twist was the kind of food a horse ate. He recollected a stud of horses where experiments in feeding were tried, and two pounds of barley per day were given. While this continued there was no end of colic and twist of the large and small intestines. When the barley supply ceased so did these ailments.

A vote of thanks was unanimously accorded to Prof. Smith for his very able address, and the proceedings then terminated, an address on "Firing," by Prof. Pritchard, being deferred until a future meeting.

The Society adjourned until October next.

LANCASHIRE VETERINARY ASSOCIATION.

THE Quarterly Meeting of this Association was held at the Blackfriars Hotel, Manchester, on May 25th.

The President, Mr. Woods, occupied the chair.

After the usual preliminary business the following gentlemen were nominated for membership:—

Mr. Walter Packman, M.R.C.V.S., of Bury; Mr. Harry Race, M.R.C.V.S., of Burnley; Mr. Kendall, M.R.C.V.S., of Barrow-in-Furness; Mr. Edward Curbishley, M.R.C.V.S., of Stockport; Professor W. O. Williams.

The consideration of "General and Veterinary Education" was again postponed as there was not time to discuss the question.

Mr. J. B. Wolstenholme exhibited the spleen of a horse containing large tubercular tumours and also showed the urinary bladder of a gelding with large lateral diverticula or cornus.

About 35 members and friends were present.

Mr. Henry Thompson, M.R.C.V.S., of Aspatria, then read the following paper on—

"DENTITION AND DENTAL DISEASES IN HORSES AND CATTLE."

His lecture was well illustrated by diagrams, together with numerous special instruments and interesting specimens.

He said: I am pleased to see such a good gathering of the profession, and thank you very much for the compliment you have paid me in attending. I am afraid you will be somewhat disappointed, for I have not prepared a set paper, and fear my remarks will suffer somewhat in consequence. Having a country practice, I will confide myself principally to young animals on the farm during the stage of dentition, and trust to the discussion to bring out the diseases and injuries which are met with in town practice. When at College, some 32 years ago, I never heard a lecture on dentition, and if there is one thing more than another that should command the attention of the country practitioner it is that of dentition. The condition of the teeth at times creates various disorders, disease, and even death. By the casting or shedding of the crowns of the temporary, and their replacement by the permanent teeth, together with certain marks, the age for the time is indicated. Looking at the diagrams, you will notice that at birth the foal generally has the two central incisors, and three molars on each side above and below, all of which are temporary. At 6 to 8 weeks he gets 2 lateral temporary incisors above and below, and from 8 to 10 months the corner incisors. From 12 months to 2 years old small ponies are sometimes passed off as 5 years old, more particularly coal-pit ponies. At 1 year the 4th molar (permanent molar) first appears, and from 2 to 2½ years the 5th molar should appear; and it is to this period of the animal's life I shall give most attention. In many cases, in cross-bred cart-horses, the 5th molar does not appear until from 2½ to 3 years. He now commences to cast the 2 central incisors, also the 1st and 2nd molars above and below, which are replaced by permanent teeth. By this we see in some cases, which cases are of the greatest interest to us,—that the horse at 3 years old not only casts 12 temporary teeth, but gets 16 permanent teeth, viz:—4 central incisors, 1st and 2nd molars on each side above and below (8), also the fifth molar (4). About this time the animal is brought in from grass and put to work. What with the dental irritation at this time and his new mode of living, is there any wonder that some animals suffer, and some to a great extent? If we take into consideration the disorder and fever set up in some children during dentition, and the nervous exhaustion and complaints arising therefrom, need we be at all surprised to notice at this period the commencement of certain nervous disorders

in horses? Having had ample opportunities of inspecting animals from foals and upwards, as exhibited at the agricultural shows, I find it very rare to notice any sign or symptom of chorea, shivering, stringhalt, or clicking, until the animal is 3 years old. From long observation, I am inclined to think that in the irritation set up during the extensive dental process I have just referred to, we have the commencement of these nervous disorders through reflex nervous action, more particularly so when there is a hereditary tendency. Therefore, when a horse is rising 3 years old, it is in the most critical period of his life; for not only have we associated with it the already-named complaints, but we have also strangles; though whether this is partially due to the extensive dental process, or the change from out to indoor life, I can scarcely say; yet at times I am inclined to think that dentition has in certain cases something to do with the cause. Again, at this period, if true dentition is not going on we have pus forming in the sinuses, or disease of the alveolar processes, more particularly in the upper jaw, ending in softening and degeneration of the bone. Shortly after I commenced practice, a three-year-old cart colt was brought to me in a very emaciated condition, for the purpose of having his lampas burnt or cut. On looking into the mouth, I saw the crowns of the 1st and 2nd temporary molar sitting on the top of the permanent teeth, which were well up above the gums. Here, then, was the cause of the poor condition of the animal. I could not remove these shells with my fingers, and having no instrument I resorted to a blacksmith's shop, and had clips made on the side of an old pairs of tongs. With these I removed the 8 shells or crowns, and then prescribed tonic medicine. Up to this I knew little about dental trouble in my patients, and this was my first lesson. Since then I have devoted a good deal of time to it, and have had made the various instruments you see on the table. I have generally found the crown of the 2nd molar has come off before the first. I have also taken the crowns off both together, as is well shown in this specimen. When young animals are suffering from retarded dentition they lose flesh, the abdomen becomes tucked up, there is a long shaggy coat, tight skin, ewe-neck, thin thighs, flat ribs, and they drag their legs, walking with a listless gait; there is also occasional diarrhœa. Examine the mouth and remove the cause. It is said that prevention is better than cure, so that I now have young animals brought to my place from December to June to have their mouths examined. If necessary, I remove the crowns. This long and varied period is due to the time when the animals are born. From $3\frac{1}{2}$ to 4 years old the horse casts his lateral incisors and the 3rd temporary molar, which are replaced by permanent ones. At this period the 6th molar is coming into view; thus at 4 years old he casts 8 temporary and gets 12 permanent teeth, but seldom seems to suffer so much as at 3 years old, although there is an old saying that a 4 year old horse cannot stand work so well as a three-year-old; but this, in my opinion, is due more to the punishment he has gone through as a 3 year old, and which he has not thrown off. If you find an animal not doing well at this period, examine the mouth and, if necessary, remove the shells. As a rule, the lower come off sooner than the upper. In many instances, under the crowns or between the shells and top of the permanent teeth, we have much fœtor, as of diseased bone (was this the case with Orme?) I cannot recall an instance when I could attribute a cough to dentition, although it is very possible; in fact, why should it not be so? At 5 years old the corner milk incisors are replaced by permanent teeth. The canines or tusks appear. The horse is now full-mouthed. The age of the horse as indicated by the marks and form of the upper corner incisor, as shown on the diagram, is after "Galvanye," and when present I have found it very accurate; but the marks are not always distinguishable. I may here say that the upper portion of the diagrams are copies from plates in Professor

Brown's pamphlet on Dentition, published by Murray, Albemarle Street, London. I may also add that I have found the Professor's little work very accurate. With the exception of young horses casting their teeth and old horses with unevenly worn surfaces, I would on no occassion give a horse crushed or bruised oats. I recommend the oats to be given whole, so that the animal can have the pleasure of grinding them, thereby getting the full benefit of the salivary juices and their action on the starchy matters. Crushed oats are more liable to be bolted and cause derangment.

The upper molar teeth in horses and cattle are much larger than the lower ones; the upper being a fixture, as it were, give a broader surface for the rotatory movement of the lower jaw to act upon, thereby in some instances causing in aged horses uneven wear and overgrowths which have to be removed by the rasp or shears. For the latter nothing beats Thompson's instruments. Remember, I am not the Thompson who claims the credit for this useful article. I always operate standing, except when I have rough customer to deal with. I have seen the molars split by the animal getting some hard substance amongst its food. There is nothing worse than foreign barley. A bit of stone, a piece of iron or nail, may have got in the corn. By removing the loose portion the animal generally does well, but the tooth opposite becomes elongated or overgrown, and has to be cut or rasped. These damaged teeth are most likely to be carious. I have seen very few carious teeth, and at present I can only call to mind one really carious tooth. I think in the horse the offending teeth are more due to disease of the alveolar processes, bone plates and sinuses, than to the teeth themselves. With these forceps I now show you—which are an improvement upon Professor Pritchard's, and by the addition of the screw, I can in a few minutes remove any molar in either the upper or lower jaw. In drawing a tooth I always cast the animal, but I have great objection to casting aged horses with the "hobbles." I cast them with the ropes in the same manner as young colts. I do not use chloroform unless specially requested. I do not think it necessary. After removing the tooth, I always dress every third day by plugging the hole with tow saturated with 3 parts water and 1 part tincture of iron, which answers splendidly. Wolf teeth I consider rudimentary and in my opinion do no harm; and parrot mouthed animals have to be closely observed, and the teeth dressed when necessary. In cattle, the incisors are shovel-shaped, with well-defined neck; they are found in the lower jaw only, and are always loose in their sockets. At birth I have frequently seen a calf with the 8 incisors all up. The development and shedding of teeth in cattle are very peculiar, varying from 6 to 9 months, according to breed and mode of feeding; but the following may be taken as a fair average:—At birth a calf may have from 2 to 8 incisors, and 12 molars—3 on each side, above and below. About 6 months after birth, the 4th molar or 1st permanent makes its appearance, and at 15 to 16 months the 5th molar is seen; at 2 years the 6th molar is through. About this period the 2 temporary central incisors are replaced by the permanent, which are very much larger, and the 1st and 2nd inferior and 1st superior molars are thrown off, and 6 permanent teeth take their place. The first inferior molar is very like a wolf tooth in horses. The 2nd is frequently cast before the 1st. The 2nd superior molar is shed about 3 months after the 1st, or at about 2 years and 3 months to 2 years and 6 months. The 3rd inferior temporary molar is very peculiar, in having 3 distinct sections or columns, and resembles the 6th permanent; it is very much larger and longer than the 2nd, and is cast about 2 years and 9 months to 3 years old. Shortly after this the 3rd superior molar is shed. I have seen the 3rd inferior molar come off before the 2nd, and at times have removed them both together. The crown or wearing surface of the molar teeth of cattle is very unlike that of the horse, having sharp elevations and depressions resembling the teeth of

the carnivora, and is well adapted for tearing down the rough fibrous grass; in fact, the cow is a true herbivorous animal. Teething in cattle on many occasions causes a great deal of constitutional disturbance, more particularly from 1 and 9 months to 2 years and 3 months; by the temporary molars not being cast off, teething fever, and in many instances fatal diarrhœa, is set up. As a rule, I examine a larger number of stirks at spring and autumn, and where necessary I remove the crowns. Young animals, when suffering from retention of the crowns or shells, have tucked up bellies, flat ribs, tight hide, dirty skin, eyes gummy, and congested with mucous discharge; they feed very badly, have diarrhœa, and drink large quantities of water. I have frequently found the shells sticking fast between the cheek and gums, in both upper and under jaws. Of course, any foreign substance or anything wrong in the mouth, generally causes a large flow of saliva. The mouth should be examined and the offending object removed. I have seen the molar teeth split. In all cases where emaciation is great, I order good food, milk, linseed jelly, and give small doses of vegetable tonics.

The PRESIDENT made some general remarks upon the paper, and urged the members to discuss it fully.

Mr. PETER TAYLOR said he was always pleased when there was a practical subject for discussion, and expressed his gratitude to Mr. Thompson for his original and excellent paper. Of course, the paper has been more directed to the diseases occurring in young animals, and the various accidents and diseases which are met with in town practice in older horses have not been dealt with. The paper has been most suggestive, and very helpful to a practitioner in adopting surgical appliances in these cases. Mr. Taylor discussed the case of caries in teeth as referable to, first, chemical action on the teeth; second, some alteration in the circulation or nerve supply.

Mr. EDWARDS, Chester, corroborated the essayist as to the advisability of removing the crowns of the temporary molars at the proper time, and of the benefit arising therefrom.

Mr. DACRE thanked the essayist for his paper, and characterised it as the work of his own hands, and the result of his own observations. Referring to the time when he was in a country practice, he met with many cases of debility and colic in young horses, due to the irregularities consequent upon teething, and that the cases completely recovered when the crowns of the temporary molars had been removed. Mr. Dacre said that he had used a light chisel as a lever, wherewith to elevate the remains of the temporary tooth from its connection with the permanent one beneath it.

Mr. E. FAULKNER thanked the essayist for what he characterised as an intellectual treat, full of sound common sense, and the work of a close observer. He also asked Mr. Thompson what was the earliest age that he might expect to have a full mouth in cattle.

In similar language Mr. S. LOCKE thanked the essayist, and commended the paper he had read.

Mr. HOPKIN, in addition to eulogising the paper, said that he thought chloroform should be used when in painful operations upon the teeth, and also thought that the attention of the Society for the Prevention of Cruelty to Animals should be drawn to the barbarous manner in which the temporary incisors of horses were removed by dishonest dealers, in order to produce an older appearance of mouth than the age warranted.

Mr. A. LEATHER said that he had on several occasions used a small electric lamp for the purpose of examining the molar teeth in horses. He had found it very valuable.

Mr. MOORE also expressed the pleasure and profit he had experienced in listening to the paper. He thought that the irritation of dentition by con-

tinuity frequently extended to the larynx, and so produced coughing, which persisted so long as the irritation continued.

Mr. WOLSTENHOLME referred to the remarks of Mr. Thompson with respect to chorea, and said that he had known a number of instances of the disease becoming apparent for the first time at about three years old. One mare in particular had a succession of foals, each of which became affected at this time. In this case, doubtless, it was hereditary, but possibly dental irritation, as the essayist put it, had been the exciting cause. Mr. Wolstenholme remarked that extra care was necessary in the use of chloroform when operating upon molar teeth, as the increased flow of saliva, together with some hæmorrhage, might possibly choke the patient. He preferred to use a mixture of ether and chloroform, and not to produce complete anæsthesia.

Mr. HUGHES bore out largely what the essayist had said as to the value derived from removing the crowns of the temporary molars in cattle and horses, and of the necessity for examining the mouths of young animals in all cases where there was a loss of flesh and an impaired appetite. He had frequently removed bits of zinc, nails, &c., from the interdental spaces.

Mr. W. A. TAYLOR said that, as a practical veterinary surgeon, he came fully expecting an intellectual treat on a practical subject by a practical man, and he had certainly been gratified by what he had heard. Without debating the question as to the exact part played by dentition in the production of strangles, it could not be doubted but that the irritation consequent upon this process, the impaired digestion and nervous derangement would intensify and prolong the affection. Mr Thompson had referred to some of the disorders incidental to dentition in children; similar effects are frequently seen in puppies, and often in well-bred animals they give the veterinary attendant much anxiety. Mr. Taylor related a case which occurred about two years ago, of a grey Clydesdale mare which had caries of the incisor teeth to such a degree that he could not venture an opinion as to her age. Mr. Taylor then spoke on the effect produced by large interdental spaces in adult cart horses, and asked the meeting if anyone had had success in cleaning and filling the same with gutta percha.

Mr. BRIDGE (?) remarked that he had often been troubled with interdental spaces. That he thought a better method might be devised for treating the same than that of extracting the nearest tooth. He had tried gutta percha stopping, but was not satisfied with it, it not being sufficiently hard.

Mr. HUGHES, Oswestry, alluded to the great mortality amongst foals in his district this season.

Mr. THOMPSON then replied, and reminded the meeting that he had chiefly directed his remarks to dental derangement as seen among young animals on the farm. Whether chorea was actually produced by reflex nerve-irritation during this period, he was not prepared to say; but the numerous cases in which he had seen chorea developed at about the age of 3 years, led him to the conclusion that there was a connection between the two.

In extracting molar teeth he always cast the animal, and was very careful to get a deep firm hold on the tooth, then by lateral movement he made it loose in the cavity, after which he had little trouble in elevating and withdrawing it. He preferred not to use chloroform. When operating with the shears on overgrown molars, he did not cast. After answering several other questions which had been raised, Mr. Thompson expressed the gratification he felt in so good a discussion having resulted on his paper.

On the motion of Mr. DACRE, a hearty vote of thanks was accorded the lecturer for his paper.

Mr. THOMPSON having replied, the meeting terminated.

The following was purposely omitted from the newspaper report of the Society's Proceedings of April 13th, viz.: That this Society having heard the

report on the conviction of Mr. Hy. Beard for expression of a professional opinion as to the fitness of a horse for work, considers that the S.P.C.A. has been the means of causing an injustice to be done to Mr. Beard, and authorises an appeal to be entered against the decision of the magistrates.

JNO. B. WOLSTENHOLME.
Hon. Secretary.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

AN ordinary general meeting of this Association was held on June 24th, Maidenhead being the place of meeting on the invitation of the genial and popular Mayor of that town, Mr. James F. Simpson, F.R.C.V.S.

Before business, those present were most hospitably entertained at the Guildhall to a *recherché* luncheon by Mr. Simpson, who occupied the chair, and wore the handsome gold mayoral chain.

The meeting followed in the Council Chamber. Present: Mr. H. G. Lepper (president), Sir Henry Simpson, Messrs. J. F. Simpson, J. D. Barford, W. Wilson, Albert Wheatley, A. Sants, F. W. Hanks, Jas. East, Jno. Varney, F. W. Willett, Chas. Carter, A. L. Butters, S. H. Slocock, J. Sutcliffe Hurndall (hon. sec.), P. Irving, Wood Page, T. B. Goodall, R. Page Butt, E. Langford, Wm. Hunting, A. E. Barlow, E. C. Howard. Visitors: Vet.-Capt. Raymond, Messrs. T. B. Hamilton, J. Hatch, T. J. Arman, E. Faulkner, Manchester; and Vet.-Capt. Smith, Aldershot.

After the transaction of routine business the HON. SEC. announced apologies from Prof. Walley and Prof. McCall, and read a communication from the Central Veterinary Medical Society in favour of higher education and of a four years' course of study, but its consideration was deferred to the next meeting.

The petition of Prof. Jas. McCall and Prof. William Williams against the proposed scheme of higher examination for admission to the profession, was similarly dealt with.

Mr. J. F. SIMPSON nominated for election at the next meeting as members of the Association, Mr. H. G. Rogers, London; Mr. Hatch, Beaconsfield; and Mr. Owen, Thame.

Mr. T. B. GOODALL, F.R.C.V.S., of Christchurch, read the following important paper, illustrated by a great number of specimens, on

"THE NASAL CHAMBERS AND FACIAL SINUSES OF THE HORSE."

When our Secretary honoured me with an invitation to prepare a subject for discussion at this meeting, I was, through what might be termed an accidental circumstance, engaged in making a few notes on the nasal chambers and facial sinuses of the horse; and as the result of these observations leads me to adopt a different view to those generally accepted as to the causation of diseases of these parts; and also seems to point to a slight modification in our methods of treatment, this appeared to me an excellent opportunity of bringing the notes before the profession in the form of a short paper. Moreover, one or two anatomical and physiological facts that are of importance, and which, if I may judge from my own experience, have not been sufficiently noticed, either in our standard works, or in the curriculum of our Schools, can be more satisfactorily described by a demonstration with specimens before a body of experts, such as one would hope to find at one of these Societies' meetings, than if these notes had been sent for publication in one of the journals.

As the subject matter is still fresh on the minds of some of our members and friends, let us hope that real practical good may be gathered from the discussion that will follow my remarks. In giving expression to views that

may seem to be antagonistic to the preconceived notions of some present, I can assure you they are made with no feeling of animosity, but in all friendliness; and I trust we shall part again with friendships cemented, and with mutual knowledge gained by our interchange of ideas.

A thorough knowledge of the surgical anatomy of any particular region of the body is indispensable if we would aspire to treat the part scientifically, for, when we undertake the task of endeavouring to restore to health any part or organ of the body that, from any cause, is prevented performing its allotted task, we should remember with humility that we then presume to pose as assistants to the Creator who rules the Universe; and it should be our duty, before tampering with the body of any creature, to make ourselves thoroughly conversant with the structure and function of the part on which we are about to operate. In this branch of our calling, we *should* hold a great advantage over those practising the healing art in the sister profession, but notwithstanding the few obstacles in our way, how few of us avail ourselves as often as we might of the opportunities that are ours, by making appeals to that unerring guide—the Book of Nature? It may be the very fact of there being so little difficulty in the way, is the cause of our placing so light a value on this undoubted advantage. This remark has struck me as being particularly applicable to the subject we are about to discuss; for—I say it advisedly—if any of those gentlemen who have given us their experience of their methods of treating ailments of these particular parts, had acquainted themselves with the surgical anatomy of these parts, their remarks would have to be modified.

It may be of interest here to give a brief *résumé* of the circumstances that led me to give a closer investigation into the subject we have chosen for our consideration to-day. Some of you, I believe, are aware that it has been one of my "hobbies" for many years to acquaint myself from nature with some of the laws ruling the development and the decay of the teeth of the horse. One day in the winter I was going through a slaughterer's yard, and saw a dead pony; instinctively I looked into the mouth, and found it was of an age not always easy to find dead, viz., rising four years old. I then ascertained that it was suffering from no infectious disease, and was told that the cause of death was choking, which was evident from the amount of ingesta in the nasal chambers. The head was taken home for the teeth to be cleaned and preserved, and then I bethought me that possibly this choking might throw some new light on our knowledge of the sinuses.

Some of you may remember that when I spoke in London, I remarked on having, on one occasion, found the gutteral pouches filled with sand, dirt, and the shells of small mollusca. The horse in that case had been staked, had fallen with his head in a ditch, and died from asphyxia. I said then, that as that horse in his violent struggles for inspiration had filled these gutteral pouches with foreign bodies through the narrow orifices of the Eustachian openings, so it might be possible that under similar conditions the facial sinuses might have foreign matters passing into them. Here was a case that would prove or spoil my argument! One side of the maxillary bone was carefully sawn through, to lay open the sinuses (specimen exhibited), and they were found to contain some of the partly masticated food that had been returned into the nasal chambers in the act of choking. This must have been drawn or forced into these sinuses by the violent inspiratory efforts made.

I had, then, in the subject before me a ready made experiment, so to speak, from nature. It at once opened out a train of reasonings that were so interesting and instructive to myself, that I felt it incumbent on me to prosecute the enquiry further, and then to lay the results before the profession.

As I looked on this, I had proof positive that, for the future, there need not be a trace of a shred of a doubt that, in the treatment of diseases of these

sinuses by nasal insufflation, the medicinal agent readily gains an entrance from the nasal chamber to the sinuses.

I think that here I ought to refer to a quotation by Professor Smith. He says, "I hold that it is an absolute impossibility for any agents injected up the nostrils to find their way into the upper and lower sinus." The position taken by the Professor is assaulted here by nature, not by me.

But the proof that medicinal agents may reach these sinuses from the nasal chambers is not the only lesson we may deduce from the head before us, for the case clearly points the more than probable cause of many of these cases, otherwise obscure. Had this pony lived, it would, without doubt, have become affected with double ozœna, and if the fit of choking had been overcome without the knowledge of the attendant, the cause would have been hidden in obscurity.

In dealing with the causes of nasal gleet, Prof. Smith mentions the extension from an ordinary catarrh, and from injuries to the front of the face. To use his own words: "I have had many cases of nasal gleet with extensive bone disease, which I could not attribute to either injury or accident. Therefore there are other causes of which I have no cognisance whatever, but which are distinctly operating in the production of this condition." The case before us gives us this knowledge, viz., a violent fit of coughing when in the act of eating; but of this I intend to speak more fully after stating a few physiological and anatomical facts; then my arguments as to causes and treatment of diseases of these sinuses will be the more readily understood.

Anatomy.—There are certain points which are certainly not clearly expressed in our reference books, and judging from the correspondence one has seen on the subject under consideration, they are not understood generally by gentlemen who have been treating the disease. First, a few words about the anterior maxillary sinus. At first sight, it appears to be entirely shut off from all communication with the other sinuses, and our reference books would almost lead you to suppose that this is so; but if you think for a moment, you will see what an absurd supposition it must be to imagine that there can be a comparatively large cavity in the animal body *vacuous*—if it did not contain air, and yet shut off from all communication with the external air. I felt this argument to be so absurd, that I went to this Book of Nature to solve the mystery, and here, by this specimen, I show the exact position and course of the opening, which is always present, and in some conditions, as in this one, is large enough to admit a penholder. This opening proceeds from the larger one from the middle nasal meatus to the sup. maxillary sinus; it passes down from the common opening, directly inside the outer plate of the maxillary bone, and under the ductus ad nasam, passing over and following the roll of the maxillary turbinated bone.

It is asserted by most anatomists that this sinus is not formed until maturity, though M. Goubaux has shown a head with the sinus at six months old. Here, gentlemen, is the head of a 240 days' equine fœtus with the sinus distinctly shown; and another here shows it to be of quite a respectable size at birth; so that we may take it that all these sinuses, with the openings communicating with the nasal chambers are formed, like other parts of the body, during tœtal life. Before leaving this part of the subject, I have a most interesting fact to point out to you, viz., that by a careful examination of the condition of these sinuses, it would be possible for an expert to tell whether or no a young animal had *breathed*, independently of an inspection of the lung; for these sinuses are not inflated before the first act of respiration. (Specimens were here exhibited.)

I must beg of you now to give me your close attention to a description of the opening from the nasal chambers to the sinuses. The Professor says: "It is very small in the fresh specimen, and sometimes you have the greatest

difficulty in getting even a probe into it. It is never sufficiently large to be seen unless you push aside the turbinated bones—and I know that twenty-five minutes' hard work is entailed to expose that opening." If this assertion had been made with reference to the communicating orifice between the nasal chambers and the maxillary sinuses of the ox, I should have agreed with Professor Smith that the difficulty of injecting medicinal agents into this sinus *per nasam* would be almost insurmountable; for in this animal this opening is, contrary to the teachings of our best authorities, *very small indeed*, and the orifice is most difficult to find. In a dried specimen of the head of the ox we certainly do see a very large opening, but in the living animal or fresh subject this is enclosed by a thick layer off the pituitary membrane, and the only opening from the nose to the maxillary sinus is this very small one situated at the posterior part of the middle meatus. Only a small probe can be passed into it, and as the lower turbinated bone must be pushed on one side to find the opening, and it then takes a course *downwards*, the difficulty of reaching it in the living animal would be great. But in the case of the horse, my experience does not all agree with Professor Smith's; *there is no difficulty in finding it*, and a probe may be easily passed into it. In the horse the size of the opening varies; for that it does dilate and contract this head seems to prove—on one side of the head we find the orifice open, and on the other shut—in the same manner as the opening of the Eustachian canal may vary in calibre when open or closed.

The orifice itself is an elliptical opening about an inch in length, running first lengthwise of the middle meatus, the posterior edges of the opening being about half-an-inch from the posterior extremity of the meatus. In some cases we find the entrance of the opening protected by a protuberance of the pituitary membrane in front of it. The opening in its passage backwards from the nasal chamber, takes a half-turn from the longitudinal to the transverse plane of the head, passing over the posterior part of the maxillary turbinated bone, and it enters the sinus between this and the bony septum that divides the frontal from the maxillary sinus, formed by the edge of the ethmoidal turbinated bone. The exact position of this opening could be marked in the living head by taking an imaginary line from the anterior margin of the orbit in a direction towards the centre of the head, and another from half-an-inch above the superior margin in a forward direction, and the point where these decussate would be just over the outer edge of the opening. If we decide at any time to trephine over this opening, we should take a line bisecting the angle thus formed, far enough to take a centre for our trephine when a point on its circumference would touch the point of the angle.

From this large common opening we find one, already described, leading into the anterior maxillary sinus.

A word or two now about the conformation of the sinuses. Each of these cavities is only, as it were, a prolongation of the cavity of the turbinated bones; the upper, frontal, or maxillary sinus is a prolongation of the hollow of the superior part of the ethmoidal turbinated bone, and the lower one is a bulging out of the cavity of the maxillary turbinated bone. It is of great importance to bear this in mind when we talk about making depending orifices to drain pus collected in these cavities; for the part of the sinus situated in the turbinated bone proper, is lower than the opening we have been accustomed to make through the outer walls of the cavities, and, therefore, our openings could not drain them satisfactorily.

We profess ignorance as to the use or function of these large cavities, the only reason we have hitherto adduced as accounting for their capacity being, that a larger surface is created for the attachment of the large masseter muscles without adding unduly to the weight of the head. This is evidently one reason: but in accomplishing this end another most important function is performed,

viz., the supplying a large surface of mucous membrane for the rarefaction and moistening a body of air on one side of a thin membrane, whilst the atmospheric air strikes the other; and this appears to be as necessary for the sense of olfaction as the same arrangement is for audition.

We are only likely to arrive at the truth on any such question as this by closely studying comparative anatomy—not only as comparing the structures of the domestic animals with those of man, but by comparing animal with animal right up the scale, and noting in each the degree of development of any organ or part, and then noting how in each such animal the function of such organ or part is performed. Such a course can but lead us to the conclusion that these large cavities in the head of the horse are but prolongations or continuations of the hollow cavities of the turbinated bones; the upper one of these appears to be a large ethmoidal cell, being supplied with large filaments from the olfactory nerve; and that they are not only useful for rarefying and keeping moist the air that is respired through the nasal openings, but are as necessary to the sense of smell as are the external cartileges and appendages of the auditory apparatus for the sense of hearing. In the one case a thin membrane is struck on one side by atmospheric vibrations, known as sound, which vibrations are gathered and conducted to the membrana tympani by the external auditory appendages. On the other side of this membrane is the rarefied air in the mastoid cells, and in the horse the large gutteral pouches are always, in health, filled with rarefied air. Carrying this line of reasoning to the sense of olfaction, we find an arrangement of cells and convolutions, by which there is always a volume of rarefied air on one side the membrane on which are distributed the nerve fibres which have the power of conveying the sense of the presence of certain particles in the air to the brain. And on the other side of this membrane the atmosphere strikes, after commingling with a rarefied and moistened air, which is rendered so by having been in contact with a large surface of mucous membrane as supplied by the maxillary turbinated bone. If these cells become filled, thickened, blocked, or occluded, the sense of smell is lost, even if the nasal passages are free, as is the sense of hearing under like circumstances.

In those animals in which the sense of olfaction is the most highly developed, a large surface of the membrane is provided by an extraordinary increase in the number of the convolutions of the turbinated bones, and the capacity of the ethmoidal cells; and in proportion as we find the increased surface given to the olfactory and nasal membranes by the extent of the convolutions of the turbinated bones, do we also see the cavities of the facial sinuses less, and *vice versa*. For instance, the otter (one of the *Mustelidæ*) has practically no sinuses; most of the Carnivora, where the convolutions of the turbinated bones are great, have practically no maxillary sinus, and only a small frontal one. This is particularly noticeable in the family of the Mustelidæ already mentioned, and in the Felidæ, Canidæ, and Vulpidæ. The Rodents have no maxillary sinus, but the outer face of the maxillary bone is replaced by a thick membrane; this is also noticeable in the Cervidæ. In the horse the turbinated bones are not so highly developed as in some of the animals named, but the large surface of membrane is supplied by the turbinated bones rolling out and forming these large cavities.

The nasal chambers, too, are worthy of our consideration. We all of us know that each nasal chamber has in it three channels for the passage of air, these being formed by the two turbinated bones and their appendages; but a little closer inspection seems to indicate that each meatus conveys air for a distinct and separate purpose. The upper one, which is formed by an overlapping of the superior edges of the cartilaginous septum of the nose, conveys the air directly to the olfactory fossa, and supplies an air current on one side of the ethmoidal cells. This might be termed the olfactory channel or meatus.

The lower one, which is the largest, is directed towards the larynx, and the air probably traverses this meatus during normal quiet respiration. The middle one seems destined to convey a current of air direct to these facial sinuses. This is of material importance to keep in remembrance when treating cases of ozœna by nasal insufflation.

I have already mentioned that the upper part of each of the turbinated bones is hollowed out, and the bony plate of each forms the inner wall of a sinus, the lower turbinated bone forming the wall of the anterior maxillary sinus, and the upper one the wall of the superior maxillary sinus. About mid-way down the nasal chambers the upper cavity of each turbinated bone is terminated by a bony plate, and these plates separate the sinuses from the nasal chambers and from the appendages of the turbinated bones. The appendages have a basement structure of bony and cartilaginous material, rolled upon itself; the upper one from behind forward and from below upward; the lower one in a contrary direction; but note that the interiors of these appendices are open, and form a part of the nasal chambers proper. In the fresh specimen the cartilaginous edge of the roll of each appendix is not fixed, but evidently motile; the canal formed by the roll of each appendix leads to the common opening into the sinuses. The function of the appendages is, first, to guide the air current to a focus at this opening, where it passes into the cavities, and the large hollows of the turbinated bones, to which we have given the name of sinuses. They would also protect the channels leading to the sinuses, and the olfactory cells from the invasion of foreign bodies.

Dealing more particularly with the nasal chambers as regarding their relationship to the sinuses, may I point out that the cartilage constituting the base of this superior cornu of the maxillary turbinated bone, forms a loose attachment to another cartilage proceeding backwards from the ala of the nostril; and at the anterior and lower part of the middle meatus, at the commencement of the channel for the passage of air to the sinuses, is a boat-shaped fossa or depression of some capacity. The mucous membrane at this part is extremely sensitive, a touch induces sneezing, whereas a probe or tube may be passed high up the lower meatus with comparative ease. Each appendix is covered by, and its structure is chiefly composed of, *erectile tissue.* This begins at the bony septum of the turbinated bones, and becomes more marked towards the nasal openings. In a paper such as this, a practitioner, which is all I profess to be, has not the time to enter into minute histology, however much his inclination might lead him to do so; but there is a good field of work open here for some of our specialists. The membrane has in it numbers of large trabeculæ, the coats of which are pink in the fresh subject (specimen exhibited). They are composed principally of yellow elastic tissue, but muscular fibres are found interspersed amongst the elastic fibres. The muscular fibres, and the anterior parts of the appendices, become confounded with the muscular structures regulating the opening and closing of the anterior nares. One of these, the small super-maxillo nasalis, a broad muscular band passing over the ridge of the anterior maxillary bone, becomes attached to the upper cartilaginous prolongation of the appendix of the maxillary turbinated bone, and by its contraction this cartilage would be directed into the cavity of the false nostril, and thus the boat-shaped depression and the channel leading to the sinuses would be closed. The erection or contraction of this erectile tissue, assisted probably by the muscle I have named, would especially by its action on these free, mobile extremities of the cartilaginous basement structure of the appendices of the turbinated bones regulate the capacity of the nasal chambers for the ingress and egress of large or small volumes of air; *and this would also tend to open or close the common opening to the sinuses.* When the horse has his head down grazing, or feeding naturally, these trabeculæ would probably be distended, the nasal passages would be of small

calibre, and the openings to the sinuses being also closed, foreign bodies would be prevented gaining access to them.

Digressing for a moment, I may here point an argument against hayracks above the horse's head, for, with the head up feeding in this unnatural position, the turbinated erectile tissue would be empty, and the nasal passages and the openings to the sinuses large, thus favouring hayseeds or other foreign bodies finding a lodgment there, and being a possible cause of some obscure attacks of ozœna. When the horse's head is extended in the gallop, this middle meatus would be closed by this superior cornu of the maxillary turbinated bone being drawn into the cavity of the false nostril—which is probably the use of this space—but the respiratory opening would by the same movement be enlarged.

Causes of Ozœna.—Besides the extension of nasal catarrh and injuries to the face, you will be prepared to hear that I believe the most probable cause of obscure cases is the presence of foreign bodies in the sinuses. What more likely than in the act of coughing, from any slight irritant in the air passages when feeding, a little of the food may find its way through these orifices into the sinuses, and there becoming lodged, set up such an amount of irritation as to induce suppuration and thickening of the membrane. In such a head as this (referring to specimen) where two fingers might be passed through the common opening, such a thing might easily occur. It may be argued that we do not often find such a large opening; the answer is, that neither do we find the disease of ozœna of very common occurrence. I should say that this would have been the cause of the pus-bags mentioned in Professor Smith's paper as being found in the sinuses of the head of a mule. A particle of food would probably have been found in each bag.

Teeth.—I do not believe that teeth are to blame in anything like the number of cases for which they have been held responsible. There may be an immense amount of inflammation and caries of the tooth and the alveolar cavity, without the extension of the inflammatory process to the lining membrane of these sinuses. There may be often quite an enlargement in the alveolar cavity, with fœtid breath and a fœtid smell in the mouth, and yet no true nasal gleet. The commonest of the causes of caries of the teeth of the horse is a little ingesta becoming insinuated between two teeth; the gums become inflamed, the teeth separate slightly, a little more food becomes insinuated, and becoming impacted is passed down the alveolus in the act of mastication. (Specimen exhibited.)

What can we say, then, to the advice given to extract a molar tooth to establish a drainage from these sinuses to the mouth? I am not speaking now of a diseased tooth. At the London meeting in October last, I am afraid, from the reports of my remarks, that I did not express at all clearly what I intended to convey, viz., the absurdity of talking about extracting a horse's molar tooth with this object. In the human subject the case is very different. Just look where these alveolar cavities are situated. At all ages they form a septum between the teeth and the sinus. In a young head they go high up into the sinus; after eight years of age, when the pulp cavities of the molars are closed, they become shallower year by year, by a very gradual development of these bony plates crossing the sinus; the alveolar sac, with its contained tooth, being thus very slowly forced out of the cavity of the sinus, and the face of the tooth by this means always renewed with a fresh grinding surface; the teeth themselves becoming less year after year.

Both the shape and capacity of the sinuses are, by the same process, very materially altered with the age of the horse. They also change with the development of the molar teeth. If a transverse section of the head is made immediately in front of the orbit, it is interesting to note where it would bisect the molar arcade at different ages.

In this 240 days' fœtus it would cut through the third molar. At birth it would barely touch the third.

At one year old it would be behind the fourth.

At two years old behind the fifth.

At three years old through the middle of the sixth.

At four years old the posterior part of the sixth would be cut.

In an old horse the section would be well behind the sixth.

In a young horse, as for instance, this four years old, the alveolar processes of the last three molars are seen to be projecting into the superior maxillary sinus.

At about 12 years old, the fourth and part of the fifth are in the anterior sinus.

In an old horse the alveolar processes of the last three molars are all generally seen in the anterior sinus.

But during the whole of the life of the horse, and notwithstanding all these changes of shape and capacity which you will observe are all brought about by changes in the relative shape and size of the superior maxillary bone *only* —the *relative* position of this opening from the nasal chambers to the sinuses *never changes*; it is always at the spot I have before indicated.

Returning to the question of extraction. After the molar has been removed which, except in an old horse, is never a light operation, there still remains this bony septum that must be pierced in some way, and then the very thing would happen that I hold to be a common cause of disease of these alveolar cavities. And not only would ingesta be impacted in the alveolus, but there being now a clear passage established, it would pass directly into the sinus! and the last state of that horse would be worse than the first! We should have foreign bodies without stint, going directly to the delicate membrane it is our object to relieve.

Treatment.—In my time I have treated cases surgically by trephining, and medically by nasal insufflation, with success. Not that I have had many cases to cope with; I should say that these cases are not so common amongst civilians' horses as in our military establishments.

The first endeavour should be to ascertain the probable cause of the malady; for our line of treatment must be guided by the knowledge so gained. If from the history of the case we have reason to believe that it has been induced by the lodgment of a foreign body, as in this head, which would doubtless have developed nasal gleet had the horse lived, then the treatment by the injection of medicaments *per nasam* would be wrong. We should trephine, and, by a thorough cleansing, rid the cavities of the foreign matters contained in them. But where are we to trephine? What on earth is the use of an opening at the extreme upper part of the frontal sinus? Or at the spot marking the division between the posterior and anterior maxillary sinuses? The part of the cavity over this plate, which is the wall of the opening into the nasal chamber, is untouched, and not even with an iron scraper,—such as Prof. Smith advises—could we possibly scrape a diseased membrane from all these nooks and crevices. I would have the low opening as suggested by Prof. Smith near the anterior edge of the maxillary ridge; but my upper one I would have here, just over the orbit, and between that and the median line of the head. It would then be directly over the common opening from the nasal chambers to the sinuses, and if, as we know from experience, there is any difficulty in establishing a drainage from the sinuses into the nasal chambers—the canal being closed from any cause—what more simple than first to try a syringe with a curved nozzle, which should be introduced under this plate into the natural orifice, to effect a passage by forcing a stream of water into the proper channel? If this method were not successful, then with a curved pair of scissors this thin plate could be removed, and an opening as large as

you like easily made directly into the nasal chambers. This should commend itself as a more scientific and rational method of treatment than plugging this lower opening and injecting water into the sinus by a force pump, until something gives, no matter what—probably one of these plates of the turbinated bone.

Suppuration into these cavities may follow a catarrh, the inflammatory action extending through the orifices to the membrane of the sinuses. In an ordinary attack, the membrane of the sinuses takes on a healthy action simultaneously with the pituitary membrane; and I think, in looking at the anatomical structure of the part, we can understand the method and reason of that old-fashioned remedy for nasal discharges, of steaming the head with pine saw-dust, being so efficacious; we have in this agent the active principle of the eucalyptus, and its astringent and sedative action on these mucous membranes is carried by the steam inhaled to every corner of these sinuses.

But sometimes, through neglect, the orifice becomes partially closed through thickening of the membrane, or by inflammatory products still in the sinus. In these cases medicaments may be ejected *per nasam*, so as to be brought directly in contact with this communicating opening. There is only one right way of doing this, and I believe that a further knowledge of the structure of the nasal chambers would lead gentlemen who advocate this treatment to slightly modify their methods. For instance, it does not appear to me to be correct to talk of "passing the tube of the insufflator as high as possible, or until some of the injection finds an escape, either through the opposite chamber or the mouth." If the tube were so passed, the opening into the sinuses would be missed. It will be observed, too, by reference to the specimens on the table, or much better—by examining a fresh subject, that in order for the medicinal agent to reach these sinuses, the tube of the insufflator should not be passed along the floor of the nasal chamber as some advise. By following either of these methods the bulk of the injection would pass backwards into the fauces, or possibly some of it would go through the Eustachian openings into the gutteral pouches; but the sinuses—the parts it is our duty to reach—instead of having the full benefit of the injection, would be scarcely touched.

It should be noticed that any instrument or agent passed into the nasal chamber, is directed by the peculiar conformation of these cartilages at the anterior nares, into the lower meatus and away from these upper ones. Therefore, if we would ensure the therapeutic agent coming in contact with the membrane of the sinuses, the nozzle of the insufflator—which might be improved by having a soft pad of sponge or indiarubber on its extremity—should be guided carefully over this upper horn of the appendix of the maxillary turbinated bone; it is then in the boat-shaped fossa I have spoken of, at the lower part of the middle meatus, and it may be passed along the channel to the orifice leading to the sinuses, and then the substance, whatever is used, may be injected.

In man, the maxillary sinus is comparatively large, and surgeons can reach it, and treat disease in it, by passing a soft curved bougie up the middle meatus and into this communicating orifice. Why may not this be done with the horse? The difficulties are surely not insurmountable, but it would require practice and a thorough knowledge of the anatomy of the parts and their functions. In man, too, a tooth may be extracted to provide a drainage, but this would not be permissible in the case of the horse.

Therapeutic Agents.—I have purposely refrained from saying much regarding the agents to be employed in the treatment of diseases of the sinuses. I am no believer in *specifics* and old recipes—and most practitioners have their favourite remedies. I am partial to the employment of a weak solution of the Chloride of Zinc, or of Carbolic or Boric Acid, for injecting and cleansing the sinuses when they have been trephined. And I have had reason to be more

than satisfied with the result of the use of Iodoform and Borax for nasal insufflation. Probably we should not find these suitable for all subjects—but whatever agents we decide on using, I would advise that the methods I have advocated for their employment have a trial.

Gentlemen, I beg to thank you for your very kind indulgence. It has been my endeavour to demonstrate that both surgical and medical methods of treatment for nasal gleet are correct under their respective circumstances, and each may be wrong if the cause has not been hit off correctly. What I would say in conclusion is, that in making our diagnosis we pay special heed to the likely cause, and also bear in mind the anatomical and physiological facts I have endeavoured, though I know imperfectly, to lay before you—when we have determined on the line of treatment to adopt. Let us approach each case with an unbiassed mind, and though we may each have been successful in one or other method of treatment, we shall be certain to find out, sooner or later, that a hard and fast rule cannot be laid down.

Discussion.

Prof. SMITH, in opening the discussion, said they were very deeply indebted to Mr. Goodall for his excessively able address, and also for the specimens which accompanied it. It appeared to him that the main point of the address was directed against their defective anatomy and physiology; and he had to acknowledge, though he had paid a certain amount of attention to those sciences, that Mr. Goodall had mentioned many points which he certainly had not observed before. He alluded more particularly to the erectile tissue in part of the nasal chamber. Now his attention had been drawn to it he could charge his memory with the fact that that material did exist there; and other points in the paper were clearly additions to their anatomical and physiological knowledge. Perhaps they all had an indistinct idea that three distinct passages existed in the nostril, but he never heard the thing so clearly defined before. It was impossible to criticise that excessively able paper without having seen it in print. Mr. Goodall would pardon him for not having the same complete knowledge of the causes of the affection as himself, inasmuch as he (Prof. Smith,) although he had had some opportunity of making post-mortems in cases of suffocation, had never seen food drawn into the sinuses through the nasal chambers. He thought Mr. Goodall had been rather hard on some of the anatomical teachers, because if he heard him correctly he said they were instructed that the inferior sinus did not communicate with the nostril. (Mr. Goodall: It is not pointed out clearly in our reference books.)—They were instructed that the sinus did communicate with the nostril, and he was under the impression that it was so laid down in the text books. However, a remark of his (Prof. Smith's) which was most distinctly defective, Mr. Goodall had emphasised, viz., the length of time it took to expose the opening in the nasal chamber. Obviously it was not 25 minutes to find it after the head was laid open; but obviously it took some time to remove the skin, split the head, &c., and then find it. It was new to him that the openings into the sinuses dilated and contracted in the same way as the Eustachian tube, and he should much like some proof from Mr. Goodall. They differed as to the desirability of trephining the head over the orbit. Whatever they injected there must, he supposed, pass directly into the nostril. He was under the impression that throwing material into the sinus was to disinfect and wash out the sinus itself. The use of the false nostril, and the drawing of that piece of cartilage into it, was also quite new to him; and that was an illustration of the exceeding amount of industry Mr. Goodall had shown and the large amount of information they had gathered. In the pus bags in the mule's head no food did exist. He differed also as to the teeth being rarely to blame as the cause of nasal gleet. As he had recently brought the subject before the notice of a kindred society,

he need not dwell on his belief that the teeth were very generally the cause of nasal gleet, and that the extraction of those teeth then seemed a reasonable measure. He did not say the extraction of sound teeth would be a thing one would do commonly. He should probably extract the fourth, or even the fifth, but he certainly should not try the sixth. He quite understood the grave disadvantage of opening the cavity of the mouth into the anterior sinus.

Mr. GOODALL: Your fifth would be into the anterior sinus after 12 or 14 years of age.

Prof. SMITH continued that that again showed how careless they had been in making their observations. Lastly, he would emphasise the point that although their anatomy and physiology had been so gravely defective, although those favourable to nasal insufflation had been in favour of it in the wrong way, and those who practised surgery had been making incisions in the wrong place, and pulling out teeth which it seemed they ought not to have pulled out, yet sitll had succeeded in curing a large number of their cases; so that although their knowledge had been so defective, still to a certain extent they had been on the right track, and a certain amount of credit was due to them as general practitioners for being able to tackle those cases in a fairly satistactory manner. He apologised if his observations had been more personal than they should have been in opening that discussion.

Mr. HUNTING said somebody had remarked that genius was the infinite capacity for taking pains; and if so they could congratulate Mr. Goodall on possessing genius; for they seldom had a paper which showed more hard study and minute work. But a man might have genius, and might do a great deal of minute work, and yet arrive at a wrong conclusion. He did not know that Mr. Goodall had arrived at a wrong conclusion, but he thought he had on some part of that subject. He began by trying to show how it was that cases of collections of pus in the sinuses might occur. To find sand in the sinuses after drowning was nothing new. There were cases of men falling into flour and dying of suffocation, in which every part of the mucous membrane was found plastered with flour. But there they had expiration and inspiration both forcibly performed. If they wanted to distend the Eustachian tube it was done by violent expiration as well as inspiration; and it was only by a violent struggle, as in the last struggle for life, that they would get such an amount of violent expiration and inspiration as would fill up the sinuses. They found those cases of impacted sinuses in animals which had had no such violent struggle. There was through the nose a direct passage into the chest, but there was no thoroughfare through those sinuses. If, as Mr. Goodall would tell them, merely extra exertion in the way of inspiration would draw sand and other foreign matter into the sinuses, impacted sinuses and pusing would be very common, whereas it was exceedingly uncommon. They found animals with matter in the sinuses from no cause they could trace. If it arose from extraordinary exertion in breathing they would expect in ordinary practice to have 30 or 40 cases of impacted sinuses in a year; but as a matter of fact they had perhaps one. There was some cause, then, which he thought Mr. Goodall's explanation did not clear up. As to the insufflator, if a little swelling was sufficient to cause the sinus to retain the pus, he held that the same closure was quite sufficient to prevent the passage of stuff from the insufflator into the sinus. If they had the passage blocked by a thick mucous membrane how would the pressure of an india-rubber ball send a powder into the maxillary sinus? As to the size of the sinuses in the horse, Mr. Goodall pointed out on the old theory of design how those were made and what they were made for. He thought all scientific men had given up such notions long ago. The existence of a cavity in the head was simply the adaptation of the skill or face to the requirements of the animal. That the turbinated bones had anything to do with the sense of smell he did not believe

a bit, or the power of smell would extend all along them. He liked the design of an Almighty Power, under which the Almighty Power made the horse for certain purposes which did not exist at the time he was originally made! Prof. Smith said if they had success in their practice, all well and good. Not at all. They required an exceedingly large number of cases before they could draw such an inference. If he sprinkled salt on a horse's tail every day for a week and he got better of a corn it did not prove that the salt cured the corn. Unless they had hundreds and even thousands of cases of the same kind and under the same circumstances they had no right to draw such inferences. He would say this in favour of Prof. Smith, that he did not think it was necessary for him to have descended to such an argument. Prof. Smith had a very clear idea about the case. They had a cavity with matter in it. It was such a simple thing to make a hole in the side of that cavity to empty the matter out in a day or two that he did not understand how anyone could compare the surgical with the medical treatment.

Mr. FAULKNER expressed the very great pleasure it gave him to enjoy the hospitality of the worthy mayor, and to listen to a most original and clear anatomical and physiological demonstration. Mr. Goodall had shown that he possessed immense self-denial, power of exertion, and love of the profession. Having as a practitioner seen a fair number of cases of ozœna, he did not quite agree with Mr. Goodall that they had been in such a state of happy ignorance. He took it they knew that the sinuses of the head had a function beyond affording surface attachments for muscles, and also that there was a passage between the sinuses. As the result of his experience, he must say he agreed with some of the remarks that had fallen from Professor Smith, having seen cases in which he had not the slightest doubt that the teeth were actually the cause of the mischief. He had also seen cases in which he was perfectly satisfied that the teeth were not the cause; but he had never yet seen a case which led him to believe that impaction of the sinuses with ingesta was the cause. He had frequently in post-mortems of animals that had died in violent death struggles, found sawdust and peat moss right into the lungs, and in the sinuses, but he had never found ingesta to be the cause of nasal gleet. They ought clearly to understand what they meant by nasal gleet. There might be a gleety discharge without impaction of the sinuses. He had never yet succeeded in treating it by means of the insufflator, although he was sure he had passed it into the middle meatus. Mr. Goodall made the rather cynical remark that the disease was not so common amongst the horses of civilians as in the army, but town practitioners in Manchester got five or six cases of ozœna in the year on an average.

The SECRETARY said it was not often they had the privilege of listening to so valuable a paper. He proposed the adjournment of the discussion to the next meeting, when he would have great pleasure in opening the debate. This was unanimously agreed to, and it was resolved to have the paper printed.

It was unanimously resolved that the next (November) meeting be held in London.

The proceedings closed with votes of thanks to the President and Mr. Goodall.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING was held at the Albion Hotel, Lincoln, on June 23rd, the president, T. E. Smith, Esq., M.R.C.V.S., of Market Rasen in the chair, and those present were Messrs. Hartley, Lincoln; Brooks, Fulbeck; Russell, Grantham; Goodall, Melton Mowbray; Rudkin, Grantham; Jas. Smith, Huntingdon; Osborne, Fulstord; Dickenson, Boston; Howse, Lincoln.

The Elections.—The Committee.

Captain RUSSELL, in the name of the association, congratulated Mr. Hartley upon having been placed upon the Council of the Royal College of Veterinary Surgeons.

Mr. HARTLEY suitably acknowledged the compliment, assuring them that it would be his pleasure as well as his duty to do all in his power to further the interests of the profession.

A letter was read from W. J. Mulvey, Esq., F.R.C.V.S., President of the R.C.V.S., with regard to petitioning the Privy Council in favour of the Charter.

The SECRETARY read letters of apology for absence from Professors Walley and Axe, and Messrs. Fleming, Wragg, Hardy, Gresswell, Freer, and Gooch.

A letter was also read from Mr. H. G. Rogers respecting veterinary education.

Considerable discussion followed, and the general feeling was evidently against the four years course of study, and finally the following resolution was adopted:—

"That this association is of opinion that the educational status of veterinary surgeons should be considered, but that the society is against a four years course of study, and thinks that if one year's pupilage could be introduced it would be a great advantage."

The petition of Professors McCall and Williams to the Privy Council against the new Charter was read and ordered to be on the table.

This petition has already appeared in our pages.

The following new members were proposed, seconded and duly adopted:—Messrs. Thos. Spencer, Caistor; R. A. W. Stevenson, Brigg; Chas. Seely, Lincoln.

A certain number of members being in arrears with their subscriptions, it was decided that if these monies be not paid by the next meeting in October they should be struck off the rolls of the association.

The advisability of altering the day of the meeting was considered, and the secretary directed to canvass the members on the subject.

Mr. T. E. Smith's Presidential Address.

The PRESIDENT then read his inaugural address, in the course of which he alluded to the objects of the society, which was not only to hear and discuss given subjects of interest, but to promote a friendly feeling, and to have the interchange of opinion on any particular case which might have occurred in the practice of many of its members. Having thanked them for the honour conferred upon him, and promised to do his best for the welfare and interest of the society, he said they were in a very flourishing condition. They must congratulate themselves as a society, and their friend Mr. Hartley, as one of their members, on his election to the Council. This was a very good proof that the profession as a body were in favour of a new Charter.

What benefit we may derive from it if passed, said the president, remains to to be proved, but for myself I fail to see why a member of the College, although he does not care to go in for the Fellowship degree, should be debarred from sitting on the Council and taking part in the management of the business of the profession.

We are all perfectly aware there are many good and respected members, equal in practical ability to many of the Fellows, who have been in active practice for many years and consequently behind in theory, who have not the time to study for all examinations. The president further commended upon the additions and improvements at the College since he received his diploma 24 years ago, and there was also an entirely new staff of teachers. The course of study had been altered, the teaching staff considerably increased, the fees

enlarged, and several fresh subjects of study had been added. To the microscope the patient owed much; and in therapeutics great changes had taken place, a more palliative mode of treatment has been adopted. The newly formed Board of Agriculture had been beneficial in checking the spread of contagious diseases, though more liberty should be given to the veterinary surgeons as inspectors, and not place them so much under the police and other non-professional officers. He condemned the appointment of policemen as cattle inspectors by County Councils, and thought this might be remedied if they banded themselves together and made application to the proper authorities.

The Veterinary Surgeons Act, so far as he knew, had been of no benefit to country practitioners, and men who before practised as veterinary surgeons and had not been registered, were carrying on in exactly the same way without interference. Horse breakers, grooms, chemists, &c., were allowed to dock, ball, prescribe for and attend horses and cattle without being subject to fees of any kind. In conclusion, he said he would like to see the old question of compulsory pupilage carried out.

Mr. JAMES SMITH, Huntingdon, read the following paper on

"SEPTIC PNEUMONIA IN CALVES."

He said: The reason I am bringing forward a paper for this meeting is because when time was getting short I was unable to get anybody else to do so, and I trust that this fact alone will be sufficient excuse for any shortcomings that may be found in the paper I have prepared. If I may do so, I will here suggest that before we part to-day, some member volunteer to read a paper at our next meeting. If this be done it will save a great deal of trouble and certainly lessen the anxiety of your Secretary.

I have headed my paper "Septic Pneumonia in Calves," but at the outset I wish to say that I am not certain that this is the best name for the disease in question, but our literature on the subject is very scant, in fact, I have failed to find a similar case recorded. I intend to give a short history of an outbreak as it was presented to me, as this will be a much easier task than to give an elaborate description of the disease.

Early in December last I was requested to call at a farm in my neighbourhood to see some calves that were ill. I found 6 were dead, and 10 very ill in a separate loose box used for a hospital, while in the byre itself there were 40 calves, several coughing a little, but otherwise to all appearances in good health. I found that for three years in succession there had been an outbreak of the same disease, and many calves had died. One Veterinary Surgeon had called the disease husk, while another had thought it contagious pleuro-pneumonia.

The animals in the hospital presented a very pitiful appearance. They were quite unable to stand, were very much emaciated, grunting very badly and showing every symptom of acute pneumonia. On enquiry I found that the first thing noticed was a short, husky cough, and they refused their milk. When this occurred they were removed into hospital, and when once there the disease ran a very rapid course. In one exceptional case the animal was found dead in the morning and previous to this time no one knew that it was ailing. I will tell you more about this when I come to *post-mortem* appearances.

Previous cases had been dosed and blistered, etc., but no treatment proved of any benefit. On making a *post-mortem*, in all except the calf found dead, the lungs showed the effects of acute inflammation, but what to me was remarkable was the extraordinary amount of putrefaction and disorganisation of tissue that had taken place. There were gangrenous patches scattered all over the lungs, some large and some small. In some places the lung tissue

was transformed into a dirty grey or blackish mass. In others, where the gangrene was close under the pleura, the latter was raised up in blisters, and in some cases the softened mass had broken through into the chest cavity. In the case of the calf found dead, in the centre of one lung was a cavity which had contained quite a pint of pus, and no doubt had ruptured during the night.

I came to the conclusion that I had a special form of pneumonia to deal with, and to make sure, submitted some specimens of lungs to Professor Penberthy, who very kindly examined them, and at once said they presented the appearance of septic pneumonia.

Having decided the nature of the disease, the next question was how to arrest its spreading, and the following measures were adopted with absolute success. The healthy calves were taken out of the large byre and put into a shed. The manure was then carefully taken out and the boards, mangers, floors, &c., were thoroughly cleansed with boiling water and carbolic acid. The place was then fumigated with burning sulphur, and after this the walls and partitions were washed with lime and carbolic acid. Before the healthy calves were put back into it, each one was thoroughly washed about the eyes, nostrils, chest and feet with a solution of carbolic acid.

The calves that were ill were then taken out of the hospital and this was treated in exactly the same way. When they were put back again they were treated with inhalations of carbolic acid twice daily, and after treatment was commenced only two more calves died. Since then the place has been free from disease.

I am aware that most frequently septic pneumonia is due to embolism when inflammation and suppuration have occurred somewhere in the body, caused by an operation wound, by a fracture, by parturition, and so forth; but I am of opinion that in this case we had to deal with a special infective pneumonia, and that the active cause for this was taken into the lungs by inhalation, causing the lungs to be so affected as to allow of the destructive action of the common organisms which produce putrefaction and gangrene. It is an admitted fact that the lungs are always in contact with these latter, but that during health they are able to resist their action. I believe that death occurs in some cases from the toxic effect of the ptomaine formed by the organism, in others through the destruction of lung tissue preventing oxydisation of the blood, and in still more from these effects combined.

In conclusion, I may just say that about 10 years ago, when an assistant in Lincolnshire, I remember a case where young calves died in exactly the same way as these. Treatment was useless, nor were we able to suggest either cause or means of prevention.

Discussion.

Captain RUSSELL: How old were the calves?

Mr. SMITH: From three to six months old, and they were bought in. A few were bred on the place, but most of them were bought in. They had the disease on the place three years in succession; the drainage was good and the stable very healthy.

Mr. DICKINSON asked if the bronchial tubes were affected?

Mr. SMITH replied that he could not see that they were. There was not the least likeness to pleuro-pneumonia, and in one place the pleura was raised from the lung in one big blister.

Captain RUSSELL said he felt indebted to Mr. Smith for his paper, for it had been his experience to have to treat exactly similar cases. In one case to which he particularly referred, the owner for several years—five or six years, lost every calf, and every calf died in the same way. He had several opinions and the disease was diagnosed as pleuro-pneumonia epizootica, but he himself

(Captain Russell) was not satisfied as to what it really was, until he heard this paper, and septic-pneumonia appeared to him to be a very good name for it, according to the symptoms. This man had six or seven calves and he had lost 13 or 14 running, and three or four were in the same way as described—lying on the ground, blowing great guns, groaning at every expiration, and undoubtedly dying. He had had Veterinary Surgeons give their opinions, but nothing could be made out. He (the speaker) made a *post-mortem* examination but he could find nothing except symptoms of acute pneumonia; the place where they were was very draughty and dirty, more like a dog kennel than calf sheds. He visited the calves again in the course of a week, and those which he had seen before ill were now dead, and the others were affected. He visited the place a third time but had never been in the place from that day to this. He thought Mr. Rudkin had been called in.

Mr. RUDKIN said that was not so. He had not been near the place.

Mr. DICKINSON expressed his obligations to Mr. Smith for his paper. He had seen the same thing exactly. It was on a fen farm on black land and had occurred for the last two years. This was the third year, and some of the calves had slight symptoms of the disease and others were dying. When sent for he thought it was filaria and prepared certain things accordingly and he was surprised to find it was not. He made a *post-mortem* examination hoping to find filaria, but he got exactly the same *post-mortem* symptoms as described by Mr. Smith. He adopted treatment which did no good, for the calves kept on dying. He told the owner that he did not think that medicine was any good, and advised him to send the animals away, to change them in fact. He did send them away, and they recovered; 70 or 80 of them lived and improved and did well. He had tried, but did not succeed in getting at the cause of this, but as far as he could judge, he believed that this disease was introduced into his herd by bought calves, "Derbyshire" as they were called, but really Irish, worth about 50s. a-piece when calves were making £4. He believed the blood became impregnated with a microbe from these five calves; he could never trust bought calves. He thought the poison entered as described from the excreta of the bought calves. The same thing had occurred in his experience with lambs. There was, he thought, no doubt it was septic-pneumonia but at the cause he could never arrive.

Captain RUSSELL suggested they might be justified in naming it contagious pneumonia, and reminded them of the recent cases on the Continent, introduced through parrots, when about 20 people died.

Mr. SMITH said he was of opinion that the calves inhaled this poison from the excreta. He should question whether the calf that was diseased would give it through its breath to a healthy animal. He attributed the disease to the calves that were bought in, and they unfortunately in his district bought the majority in. If they went in for the calf-rearing business they could only raise a few, and they bought the rest. Another point about it that he wished to impress upon them, was the fact that when these calves were put into hospital they were not so bad. When he gave them the inhalations only two out of ten died.

Mr. HARTLEY asked how he prescribed the inhalations?

Mr. SMITH: Carbolic acid in boiling water on hay.

Mr. DICKINSON recommended an instrument made by Messrs. Calvert for that purpose.

On the motion of Mr. HOWSE, seconded by Mr. HARTLEY, a hearty vote was given to Mr. Smith for his paper.

It was decided that the next meeting should take place at Spalding.

Captain RUSSELL proposed a vote of thanks to the president for his inaugural address.

This was carried unanimously, and the proceedings terminated.

The members afterwards dined together at the Albion Hotel, when Captain RUSSELL proposed the health of the president in felicitous terms, to which a suitable response was made.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE summer meeting of the Scottish Metropolitan Veterinary Medical Society was held in Dundee on July 4th, Mr. James Clark, F.R.C.V.S., Coupar Angus, President of the Society, occupying the chair, and there was a large attendance of the members.

Nomination and Elections.

The following gentlemen nominated as members at last meeting were elected to membership: Mr. Bell, Brechin, Mr. John Connochie, Junr., Ayton, and Mr. A. W. Lawson. Mr. Noir nominated Mr. Peter Young, veterinary surgeon, St. Andrews, and Mr. John Young, veterinary surgeon, Dundee, for membership of the Society.

The PRESIDENT read a paper on

"GRASS STAGGERS IN CATTLE,"

which appears at the commencement of the JOURNAL.

A long discussion followed.

Professor WILLIAMS, of the New Veterinary College, Edinburgh, said: "I have had some little experience of the disease within recent years, but I cannot throw much further light upon it than what is given in my work on the subject. It is a remarkable thing, however, that the disease is co-existent with what we call "Louping-Ill" in sheep, and it occurs about the same time of the year. There is a difference of opinion as to the cause of Louping-Ill. Some years ago, our Chairman sent me morbid specimens taken from cattle which had died, and in a spine I found the same organism that is to be found in Louping-Ill in sheep. As Mr. Clark is aware, there are peculiar conditions in this part of the country. We cannot possibly connect this grass disease with Louping-Ill in sheep, beyond the fact that it occurs about the same time of the year. If there are ticks in a district, these would be worthy of further study. The disease is exceedingly fatal, and it was my usual practice, and I recommend it still, to see that the best is made out of the animal, in order to modify the loss to the owner as much as possible. I do not think purgatives or bleeding will do much good. The botanical question should be gone into and the grasses closely studied, and an endeavour made to find out if there are any grasses in a narcotic state at this time of the year. That should be undertaken without delay, and I consider it would be more beneficial than some of the investigations undertaken by the Highland Society. If the Highland Society were to offer good compensation to men who are devoted to science of this kind, to botanists, and so on, a great deal of good would be done and a great deal of disease prevented. Unless we find the cause of the disease, our treatment will be in the dark, but if we discover it, then treatment will become successful. I throw this out as a hint to the Highland Society, which, at the present time, is undergoing changes. An investigation of this kind would be beneficial to the farmers and others who have for so long subscribed to that great Society.

The PRESIDENT: "Does the disease occur frequently in Midlothian?"

Professor WILLIAMS: "There have been no complaints for a number of years."

Mr. JOHNSTONE, Perth: "My experience is that the disease occurs more readily on farms where the land is poor, and especially where the grass grows

sharp. As far as I can see, there is no particular reason to account for it. Recently I saw stirks and two-year-olds affected with the disease, but fortunately, by a little careful treatment, they were saved. The Chairman has remarked that linseed oil is the best treatment. I found the same in my case. Linseed oil I consider a very effective remedy, and my experience is that the animals recover wonderfully well under it, but in no case should salts be used.

Mr. KAY, St. Martins, said he knew that in the south-east, and also in Lanarkshire, the disease was prevalent, because he had had experience of it with people coming to the district in which he resided. When they called him to cases of the disease they were surprised that he had never heard of it in his district. His opinion was that the quality of the grass had a great deal to do with it. There were farms which produced a more indigestible fibre in grain than others. At the same time he did not wish to assert that it was altogether a grass disease. He had seen it produced at the stall when they were fattening. The Chairman seemed to think that what was called moniplies was the effect and not the cause of the disease. He (Mr. Kay) had, on the other hand, looked upon the moniplies as the cause of the disease. It required a long time for an abnormal state to be produced, but until it got that way the bowels moved well enough, and yet they would not be hearty. When the disease reached a certain stage, the nervous system became so affected that the bowels went wrong. He had no objection to a certain amount of Epsom Salts being used, if it were desirable to operate from the bowels. He thought they should do all they could to prevent the occurrence of the disease seeing they could do so little to cure it.

Mr. RUTHERFORD, Edinburgh: I cannot speak of the disease and cannot enter into the geological aspect of the question as to how far certain lands and grasses produce the disease in certain conditions. About six years ago, however, I was brought face to face with a rather violent outbreak of the disease among a herd of cows in Edinburgh. The season was an uncommonly hot one. As you are probably aware, the grasses upon which cattle are fed in Edinburgh are sewage grown and Italian rye grass. The cattle in question numbered thirty-five, and were large heavy short-horns, fed for the purpose of extracting as much milk as possible. They were being fed on this Italian rye grass, which was strong in the head, heavily spiked, and to my mind exceedingly indigestible in quality. It was a Sunday morning when I received the message about the animals being ill, and when I arrived I found that two of them were dead and the remainder in a frantic condition; some were endeavouring to climb a wall, others were on their backs exhibiting symptoms of violent brain derangement, resulting evidently from an abnormal condition operating from the stomachs. The animals which died afforded me a ready means of making a diagnosis of the cause of the disease. A *post mortem* examination showed that whatever this cause may have been, inflammation of the fourth stomach was produced. This was not only inflamed, but in the first few feet of the intestine violent inflammation was visible in the form of red patches. The condition of the remainder of the stomachs was not unusual. The only indication which I had to go upon was that I was face to face with violent brain symptoms, which were likely to kill animals unless those symptoms could be rapidly removed. You may put whatever construction you like upon my statement. We dosed the animals with lime water and linseed tea, and it had the desired effect on all of them. Some of the animals lay in a comatose position—as if paralyzed, for three or four days, and some for a week. Like all town practitioners whom I met with, I find that rye grass is very trying on the stomachs of the animals in the summer time. I maintain that the treatment I adopted in this case, which was entirely successful, was sound treatment.

Mr. BISSET, Brechin: I have considerable experience of this disease in the Brechin district, where it is prevalent every season. My experience is that light gravelly soil has an influence on the disease. In some farms I find in certain seasons, when pasturage is good, not a single case, and that when we come to an old field, the disease reappears. I have found the disease in a calf, cow and two-year-old, and my treatment has proved very satisfactory on the whole. I have tried purgative treatment and salts and oil, but I cannot say which would be the best. Sometimes the animal gets better on the one treatment and sometimes on the other. The disease appears about the middle of May for the first time, and generally terminates about the end of June, but sometimes we have had it as late as the middle of July. From my experience there can be no real law laid down for the treatment.

Professor WILLIAMS: There is one thing which should be kept in view, and that is that the disease cannot be due to the indigestibility of the grass, because it appears too early in the year, and before the grass is in an indigestible state.

Mr. CONSTABLE, Inchture: I can corroborate what Mr. Clark has said as to treatment, but I think we should aim more at the prevention of the disease than its cure. As for the lands where it takes place, I find in my districts, where lands are considered strong, that it happens on almost all sorts of land, but, if anything, more frequently on the black soils. I think it would be a very good thing on farms where the disease is prevalent, to dose the cattle with linseed oil, and I would recommend the use of common salt, which is a very important factor in preventing an outbreak of the disease. If rock salt or other kinds of salt were placed in the fields where cattle are grazing, the disease might be prevented. Another very important thing to be kept in view is the fact that the cattle should have plenty of water, and the water should be placed in such a position that they will go readily to it. As regards the treatment, I think what the chairman has mentioned regarding the use of linseed oil is just about the experience of most of us, and I don't believe in the use of salts as a cure for the disease.

Mr. GEORGE LOW, Balhousie: I am amongst gentlemen who can speak with authority on this mysterious affection called the "grass disease." I hold very much to the views expressed by Mr. Rutherford, who takes a rather different view than that of our chairman in regard to bleeding. One of the tenants on Panmure estate, a very large farmer who has a good farm, was greatly annoyed with this disease. When this gentleman gets home his cattle he has them dishorned, and since he has adopted that method of dealing with the animals, he has not had a single case of the disease. There is no doubt that on farms where the land is poor, the cattle have been, and are liable to the disease. It is generally when the seed of the rye grass gets into a hardened state that the disease appears. If only natural grass were sown, I don't believe that, except on rare occasions, there would be any cases of it. I once had an animal attacked with grass disease, and it was on grass grown with 12 lbs. of clover and three-quarters of a bushel of imperial rye grass. I adopted bleeding and linseed, and I changed the cattle on to old grass. We had one or two bad cases, but only lost one animal, all the others having recovered, although two of them took a considerable time. Now this question has been taken up, I hope we will soon get more light upon it.

Mr. CONSTABLE, I think that a large amount of rain in the season greatly acts in keeping the disease away. In my district the disease has probably caused few deaths in a wet season; while in a dry season there will be as many as fifty. I am, therefore, inclined to think that the extent of the disease depends on the season.

Mr. BISSET: I scarcely agree with Mr. Low in regard to bleeding. When I commenced practice thirty years ago, a large proportion of practitioners

went in for bleeding cattle—spring and autumn, but I never saw any good results from it, and the fashion is now obsolete in my district.

Mr. A. HUTCHESON, Dundee: In regard to the grass disease, I think the best plan is to bleed the animals for good and all after they contract the malady. I had a case of what was supposed to be grass disease amongst a lot of Canadians; they took it after the clover was out. I doubted whether it was grass disease; but the next morning I got a telegram from my steward, stating that he had to kill the animal on account of it having shown symptoms of grass disease. In regard to what has been said about the disease occurring more readily on poor land, I consider myself a good farmer and yet I have cases of grass disease. There are some classes of land on which there will always be cases of grass disease. In regard to the botanical question, I think a good deal might be done to remedy the disease, but I do not think farmers would stop sowing rye grass in order to put a stop to the grass disease. I do not think the general opinion in Scotland is that we should stop sowing rye grass, and shall always have difficulties of this kind to contend with.

Professor WILLIAMS: We should not run away with the idea that all animals exhibiting symptoms of "grass disease" are actually suffering from that malady. I have seen cases in old cows which were supposed to be suffering from this disease, but which were actually affected with Bright's disease. We should therefore be careful about discerning between disease of the kidneys and this disease, and prescribe accordingly.

Mr. DURKIE, Mill of Manes: I wish to ask if "grass disease" and stomach staggers are the same?

Professor WILLIAMS: No.

Mr. DURKIE: We find symptoms of this kind in animals in the winter, but grass is, of course, not to be had then. I think the indigestible theory is surely far-fetched when the disease occurs from the beginning of the grass season until the beginning of July; even at the 5th of July grass is comparatively soft, and if grass is indigestible, will hay not be the same? The experience I have had is of a private nature. I have had some trouble with cows in the winter, but the symptoms have not quite the same appearance in every way as the well-known grass staggers. I had a case of a stirk which presented every symptom of "grass disease." The animal had been grazing on land which had been pasturage from time immemorial. I thought I would try my hand at bleeding and purging; cold water was put to the head and hot cloths to the back, but everything seemed to act in opposition to each other. I thought I was to be successful, but, as Mr. Hutcheson has said, I found at the finish that I had to bleed for good and all.

Mr. LOWE: I agree that the best way for dealing with fat cattle which are suffering from the disease is to give them the knife; but what are you to do with store cattle and stirks? There is little good to be done by having them killed, and we must therefore try to find some remedy for the disease.

The CHAIRMAN, replying to Mr. KAY, St. Martins, said there must be no confusion between constipation of the manyplies and true "grass disease." Mr. Rutherford refers to this outbreak in Edinburgh, but, in my opinion, it was a case of grass staggers. I assume that that outbreak was not from the month of May till the middle of June?

Mr. RUTHERFORD: It was the month of June.

The CHAIRMAN: Professor Williams states in his work, with which I agree, that the stomach staggers in horses are due to a narcotic in the grass. I do not think that grass disease is due to that at all. The Professor very firmly states that attacks are due to a superabundance of grass. Such is not the case with us. I find it on light gravelly soil, when there is a very great preponderance of rye to the almost total exclusion of permanent grasses and

clovers. Here is another thing which I also find. After a severe frost we have the disease in all its intensity. I have all along thought that rye grass is the sole cause of the disease. I have clients in my practice to whom I have suggested the expediency of altering their recipe in the sowing of seeds by reducing the quantity of rye and putting in more permanent grass, and when they did so the disease has almost entirely disappeared. In our district the remarkable thing is this, that the disease attacks the animals in certain fields, and if we transfer them to permanent pasture we see no more of it. I have also observed that, no matter how serious an outbreak may be amongst cattle grazing on a field, if you start to cut the grass and give it to them in the house, they will not take it. What is the explanation? I think it is patent, as the animals cannot select the grass for themselves. If they eat at all they are bound to take the mixture of the grass as it presents itself to them; consequently, if you give cattle a good mixture there is little chance of this gastritis ever occurring. I am delighted that we have had such an excellent discussion. It will do great good, and I think the Highland Society or Government may, with great honour to themselves, take up the subject of this disease, which is of quite as much importance as roles or the Colorado beetle. The Chairman, replying to Mr. Bisset, said he had never seen a case of the disease on permanent pasture. Regarding the case Mr. Rutherford referred to, he thought his treatment sound and rational. If there is the slightest appearance of inflammation, he considered it would be much better to avoid the use of Epsom salts.

Veterinary Education.

A discussion afterwards took place on veterinary education.

Prior to its being instituted, the Secretary read the following letter from Mr. W. J. Mulvey, Veterinary and Canine Infirmary, 5, Turk's Row, Sloane Square, London:—

"Dear Sir,—You are probably aware that the opposition to the charter by Sir H. Simpson and a few others still continues. It has occurred to me that at the present juncture much good might be done if petitions in favour of the charter in its present form were sent to the Privy Council. I enclose you a form of petition, which I shall be glad if you will get as many signatures to as possible, and return to me at your very earliest convenience."

The petition was in the following terms:—

"In the Privy Council Office.

In the matter of the petition of the Royal College of Veterinary Surgeons for a supplemental charter.

"The humble petition of the undersigned, being Individual Fellows and Members of the Royal College of Veterinary Surgeons,

Sheweth,

"That your petitioners are cognizant of the petitions and protests entered by various persons against the grant of the supplemental charter prayed for by the Royal College of Veterinary Surgeons, or for the purpose of introducing modifications therein. Your petitioners fully approve of the prayer of the petition of the said Royal College, and in particular most strongly protest against any clause being introduced in the proposed charter which would in any way abridge or curtail the power of the said college to frame its own rules, regulations and bye-laws, as conferred upon them by the charter of 1844, and employed by them ever since.

"And your petitioners will ever pray, &c."

Professor Williams opened the discussion. He said: I crave the opportunity of making a statement as to my position on this question of education, and also with regard to the new charter now being applied for. In the first

place, you are all aware that our profession was instituted in London about 100 years ago. In 1823, Professor Dick established his college in Edinburgh. These schools went on granting diplomas, one from the Highland Society and the other from London. In 1844, the first charter was obtained on the joint prayer of the London College and Professor Dick, as representing the Edinburgh College. The application for this charter was gone into heartily by Professor Dick, as well as many others interested. In 1844 the first examination of the students of the Dick College was held in Edinburgh. Examiners were appointed by the Royal College of Veterinary Surgeons, and the examination was conducted in such an unfair manner that Professor Dick at once, to use a well-known phrase, threw up his drum-sticks, and went back to the Highland Society. There they recommenced the examination, because they saw the injustice that had been done to Professor Dick by the Royal College of Veterinary Surgeons. Professor McCall and myself have now petitioned the Privy Council to have a clause placed in the new charter, giving us the opportunity of power of appeal to the Privy Council if we think an injustice is done to the teaching colleges. I hope that the meeting will say to me to-day that they approve of the action of Professor McCall and myself regarding the power of appeal to the Privy Council. There are men in the Council of the Royal College, worthy as they are in every respect, who cannot possibly deal with the educational question. They are men who are not in the habit of dealing with such questions. Things, Professor Williams continued, went on till after the disruption in 1876, when a supplemental charter was obtained, which gave power to create Fellows, and it was at this time that the ninth clause was inserted in the charter. This clause has been the cause of all the disruption. The first charter gave equal privilege to every member of the profession. If he was made President or Examiner, good and well. As soon as the man got his diploma from the Royal College, he had certain privileges, but this ninth clause, which was inserted in the charter of 1876, provided that no man should be a member of the Council unless he be a Fellow of the Royal College. Now, I have from the beginning constantly stood out against the ninth clause, and I say now what I said before. I said, in a hall in Carlisle, that this ninth clause robbed a man of his birth-right. My birth-right as a member of the profession was the privilege of being a member of Council, and possibly aspiring to the Chair. When the ninth clause was introduced, I strenuously opposed it, and I certainly went for the new charter, as it proposed to abolish the new clause. Those who support this new charter, think it is to restore the rights and privileges of the members of the profession. So far as the ninth clause is concerned, if you are a member of the Council, you cannot be an examiner, and if you are an examiner, you cannot be a member of the Council.* These are the privileges which the members of the profession have been robbed of. Is it right that I, after having gone to London for twenty-five years, and spent money to attend the meetings of Council, should not be allowed to become an examiner? Is it fair that a man who has spent money in doing his duty to his profession, should be excluded from participating in any benefit to be derived from examination fees? I do not say that they make a single penny by it. I believe every gentleman on the Board will spend nearly everything he gets. During the years I have been a member of the Council, this was an argument for the doing away of this dual appointment, the reason given being that the members of council appointed themselves examiners. Now, in all my experience, I never knew of that privilege being abused in any one instance. If they had been members of Council, many would have been fit and worthy men for that office, and I look back with pleasure on the friendship and acquaintanceship I have had with these men as examiners of my students. I

*This is not correct. - Ed. V. J.

am looked upon as a great oppositionist, but I may say that I supported the opposition of this ninth clause until it was passed into law. One gentleman in support of the new scheme says that the first anatomical examination should include general anatomy. Surely, he does not know the meaning of anatomy. All kinds of opinion were expressed in support of this new scheme. My opinion is that four years is far too long for a curriculum. A man may study our profession for ten years, and it may be a great advantage for him to do so, but I do not think that you are entitled to compel a man to study for four years when, I think, three years are sufficient. In the first place, the remuneration is not sufficient for a man to be compelled to study four years. He gets his diploma, and practises in the country, and what is his income? Is the flame worth the candle? No, it is not! He will not only suffer, but the people will suffer also. A man cannot possibly be expected to study for four years in the hope of earning £150 or £200 a year. The other day I saw a man advertising for a practice which would give him a return of £150 a year. That man may have had a private income, but could a man having no other means of livelihood be expected to study four years in the hope of securing such a return? If it is needed to extend the curriculum to four years, I maintain that the general public will seriously suffer. Then this proposal to extend the curriculum to four years will have the effect of handicapping good men. At the present time a man is not prevented from studying four years at the College. Indeed, I have a student who has been with me for fourteen years, but who was fit to pass ten years ago. He does not wish to pass, because he has money. He paid his fees for the final examination, but never went forward to it. A man is not compelled to leave the college at the end of four years. To give a man a fair start, three years, I consider, are quite sufficient, and the proposal, as I said before, will only have the effect of handicapping good men. A poor student may have to stop four years before he can go to his first examination, and twenty-four years may elapse before he can overtake his third examination; but that is no reason why good men should be compelled to attend the college for four years. The scheme will handicap good students, who should be allowed to go forward for the examination at the end of three years at the furthest. (A voice: "If they are ready.") Certainly; let a man go forward at the end of fifty years, if he likes. I have seen men who would not pass at the end of 500 years. The examination board have power to prevent a man entering the profession. They can reject him. They can make him pay every time that he goes forward for his examination. It is a most expensive thing, but it is a good thing, because it will make a lazy man work. If a man has the fear of having to pay an examination fee twice, he will do his best not to have to pay it. In view of this proposal to extend the curriculum, it should be kept in view that the Board of Examiners have power at present to prevent an unfit person entering the profession. So far, I object to the four years' curriculum on that account. Give a man a good sound English education, and a three years' curriculum will be found long enough for our profession. If our own language is not expressive enough, and we must have another language, let it be French or German. All our best works are in French and German, and if a man wishes to make progress, and put himself on a level with the literature of the day, and knows French and German, he has a great advantage over the man who does not. In the event of an outbreak of a mysterious disease, there may be nothing having reference to it in the literature of this country, but it may be referred to in a French or German work; and if a man can read these languages, he possesses an excellent advantage over the man who does not. What is Latin good for to a Veterinarian? If there is a parson in the parish, he may talk it to you, and may make a chum of you for that reason; but if you know French and German, you have a chance of a good marriage. Then

I also think written papers should be added to the examination, but I object to the removal of shoes from dead legs as a test. To take a shoe from a live leg is a comparatively easy thing, because there is a resistance, but the proposal as to taking a shoe from a dead leg, is certainly a step backward. We, who have borne the heat and burden of the day, have a connection with farriers and blacksmiths. I think most surgeons can trace themselves back to those who worked at the anvil. I, myself, can do so, and I see gentlemen around me who can do the same. In the Fitzwygram examination, it was proposed as a test that the student should be able to make shoes. It is, doubtless, a good thing to be able to make shoes, but it is not a test of scientific ability. It is an accomplishment, but it is not essential, and I disapprove of it.

Mr. RUTHERFORD: You will have to take action at once in connection with this matter which has now been raised. At the Royal College they are trying to carry their own ends. A petition is presented asking for signature. They are demanding two things, and they are not only asking you to subscribe your name to the original new charter, as approving of it in all its features, but also to oppose the attempt by Professors Williams and McCall in contraverting certain of these features. I am not prepared to sign that paper, and I am not to sign it. With regard to the first part of this new scheme, I agree with Professor Williams that the ninth clause ought to be abolished so that the members of the profession may have their privileges restored. I have also thought that the abolition of the dual appointment was a mistake, and not only deprived a man of his vote, but deprived the council, possibly, of the services of the best man for the post. It is often the case that one man is a specialist in some particular department of his profession, but this new Act, if passed, will deprive the Society of the services of such a man. Then with regard to the question which Professor Williams has raised as to the right of appeal, I do not think that we as private members have anything to do with that. Professor Williams and Professor McCall are curators of their own schools, and it would ill-become us to express an opinion in the matter. With regard to the educational question, I do not know why my name appeared in the document which has been tabled. I know that a document was sent to me for my opinions, and I commenced my remarks by saying that it did not occur to me that there was any necessity for having the course of study increased. My reason for saying that, is that there are increasing numbers of men going into the profession, and my experience has shown that there is a larger majority of men going into the profession better educated and better up in the principles and practice of the profession than was the case years ago. Thirty years ago the men who entered the profession were certainly good, taken all over, but there is now a larger proportion of better men, simply because there is a larger number of men entering the profession. My belief is that this proposal for increasing the curriculum to four years is to limit the number of men getting into the profession, and I consider that should be plainly stated. It is a scheme under which only men with deep pockets would be enabled to get into the profession. It does not follow that the men who are deepest in the pockets have most in their heads. I am certain that any scheme of this kind would prevent hundreds of the hardest-headed sons of the poor from entering the profession, and it is from that class that we have got many eminent veterinarians. If the term of study is increased, the expenses are naturally augmented. It has been said—and it is a curious argument to raise on behalf of this new scheme—that we cannot educate a man in three years; but the fact remains that under this new scheme more material has been inserted than was in the course of study hitherto, and certainly too much for the examination if honestly conducted. The scheme is a nonsensical one, and I desire to say that we should agree that there is no

necessity for it. With regard to matriculation, there is room for improvement. At the present time we have a scheme which, if properly carried out, is sufficient for all the purposes of the profession. It includes a sound English education and a good general education. It gives the privilege to students to pass with honours, but I never saw honours mentioned in connection with passes. All that is required under the present scheme is application. I agree with Professor Williams that what we want is a first-class English education. We have men joining the profession who are not even ordinary scholars. Indeed, I have a lot of correspondence from men which has been written after they have matriculated, and yet the language used is only an apology for English. I am satisfied that the matriculation scheme is not properly worked, but at the same time I hold it could easily be made more uniform to the entire satisfaction of everyone. Along with Professor Williams, I think a veterinary surgeon should be a well-educated man, but it does not follow that the students should be compelled to pass the highest examination in Latin or Greek, which are nothing less than dead languages. On the other hand, it is of the greatest importance that the men should possess a high English education.

Professor WILLIAMS, in a remark, said that—as showing that he had not been speaking from an interested point of view—the new scheme extending the curriculum to four years would increase the fees.

Mr. RUTHERFORD moved: "That the members of this Society are of opinion that the present scheme of a matriculation examination is sufficient for the requirements of the profession, but recommend that the English-passing standard be considerably raised, and that the written answers be forwarded to the Royal College of Veterinary Surgeons for preservation."

Mr. JOHNSTONE, Perth seconded, and the motion was unanimously passed.

Mr. RUTHERFORD afterwards, seconded by Mr. Bisset, Brechin, moved: "That the members of this Society are of opinion that the present three years' scheme of professional education is sufficient, provided a written examination be added to each subject at each examination, and that all written answers be forwarded to the Royal College of Veterinary Surgeons for preservation."

This was also agreed to.

The CHAIRMAN then pointed out that they had not yet dealt with the petition. He did not think that a question of this kind should be dealt with at once, and he suggested that it should be allowed to lie on the table till next meeting.

Mr. RUTHERFORD: I think we should express an opinion on the letter and petition at once. I presume the letter is from Mr. W. T. Mulvey, who is the prime mover in this matter. A sufficient answer would be that the charter as drawn up does not meet with the views of the Society, and that while the Society is prepared to go in for the abolition of the ninth clause, it cannot approve of the new charter as it stands.

Mr. A. SPREULL, V.S., Dundee, moved: "That the Society approves of the proposed supplemental charter, so far as it desires the abolition of the ninth clause of the supplemental charter of 1876; but it cannot extend its approval to or sympathise with provisions contained in the proposed supplemental charter, which deprives members and fellows of rights and privileges obtained by the charters of 1844 and 1876.

Mr. DURKIE, Mill of Manes, seconded, and the resolution was carried *nem. dis.*

The proceedings closed with a vote of thanks to the Chairman.

Army Veterinary Department.

Gazette, July 26th.

Veterinary-Capt. Stuart Murray Wilson to be Veterinary-Major; William Dunlop Smith, gent., to be Veterinary-Lieutenant in succession to Veterinary-Capt. T. J. Symonds, deceased.

Mr. Hallen, Indian Veterinary Service, has been appointed Inspector General of the Civil Veterinary Department of that country; the title of General Superintendent, Horse-Breeding Department, has, consequently, been abolished.

A strong appeal has been made by the Council of the Royal United Service Institution to officers of the Army and Navy and Auxiliary Forces, whether on the active or retired lists, who have not yet joined the institution, to enrol themselves as members. Her Majesty has been graciously pleased to allot the historical Banqueting Hall (late the Chapel Royal), Whitehall, to the Institution as a museum, and to it will be added buildings in which to carry on the important work transacted by it. In their appeal the Council point out that the "primary object of the Institution is to promote Naval and Military art, science, and literature, and for this purpose it offers to members the use of an excellent reference library, a lending library, a Naval and Military museum, a theatre in which interesting lectures are delivered and discussed; likewise accommodation for carrying on kriegspiel and classes of various sorts; and it publishes monthly a journal which contains a record of these lectures and discussions, besides other papers of a professional character. Members have in the Institution reading and writing rooms, in which they can smoke and obtain light refreshments."

The subscription is only £1 a year, and Veterinary Officers—who are at present represented among its members by only one retired officer—ought certainly to give the Institution their support, seeing the place they occupy in the army and the value placed upon their services.

Obituary.

We regret having to record the death in India, somewhat suddenly from heart disease, and at the early age of 43 years, of Veterinary-Captain Symonds, who at the time of his demise was attached to the Body Guard of the Governor of Madras. This officer graduated in 1870, entered the army in the following year, and soon after embarked for India, where he had served almost continually ever since, filling various posts with much ability and credit. He was in the Afghan war of 1880, and took part in the march from Quetta to relieve Candahar, with the force under Major-General Phayre, for which he received the medal. The deceased officer praiseworthily employed the leisure and abundant opportunities which an army career offers, to improve his scientific knowledge and contribute to professional literature and progress. He published many valuable papers in the now defunct Quarterly Journal of Veterinary Science in India, and some of these were collected, and formed the basis of two useful volumes, one on Indian Grasses, issued in 1884, and which reached a second edition in 1886; and the other on the Materia Medica of India—"Materia Medica Veterinaria Indica"—written in conjunction with the late J. H. Steel, and published so recently as 1889. Both works, which are well illustrated by figures and plates, many of them coloured, drawn by this officer, show how well he had employed his time, and are ample evidence of the more than average ability he possessed.

Among the many losses which the veterinary profession in France has sustained lately, perhaps none will be more keenly felt than that of M. St.

Cyr, Emeritus Professor of the Lyons Veterinary School, who died last June, aged sixty-eight years, at Ambérieux-en-Dombes, his native place. He entered the Lyons Veterinary School as a student in 1842, and received his diploma in 1846, when he became a civil practitioner. In 1850, after a remarkable *concours*, he again entered that school as *chef de Service de Clinique*, and commenced a noteworthy career, publishing in rapid succession valuable papers on veterinary subjects; in 1858, with Professor Rodet he became editor of the *Journal de Médecine Veterinaire de Lyons*. He was one of the earliest to combat the notion then prevailing as to the non-contagiousness of chronic glanders, and by experiments demonstrated the soundness of his views, convincing many of his opponents—among them being the late Professor Bouley. In 1866 he obtained the chair of pathology, and his method of teaching proved most successful; among other accessory means he introduced the microscope, and largely cultivated experimental pathology, in which tuberculosis, primary vaccinia and parasitism received serious attention. He became sole editor of the above-mentioned Journal in 1864, retaining that position for six years; and he also published two excellent books—one, the *Manuel de l'Exploration de la Poitrine*, and the other the *Traite d'Obstetrique* of the domesticated animals, which has become a classical work. The appreciation in which he was held was shown by the honours he received, many learned societies having elected him as one of their body. He was a F.R.C.V.S., a Member of the Institute, was decorated with the *Palmes Academiques*, and an Officer of the Legion of Honour. On retiring from teaching in 1885, he was presented with a Commemorative Medal by all his colleagues in the School, as a *souvenir* of their regard for him.

Notes and News.

A HAIRLESS TAIL.—A very remarkable lawsuit, the like of which has probably never been heard in the courts before, says the *Mark Lane Express*, was lately decided in the States. It arose from a horse sale. A trotter, in many ways a desirable animal, had one defect. In the words of the American reporter, he was "bald at the end of the spinal column"—that is to say, he had no tail. This, of course, was inconvenient for the animal in summer-time, when flies were numerous, and it was also considered unsightly, so his owner, a Mr. Conklin, had an artificial tail made, and the horse wore it to his own and the general satisfaction. About a year ago Mr. Conklin sold the horse to M. de Milt, and, as he claims, only lent him the tail, which had, in fact, really nothing to do with the natural horse. M. de Milt, in turn, sold the animal, tail included, to a Mr. Rhodes, who proceeded to drive his purchase home. The horse was not wearing his tail at the time. Mr. Rhodes had put that adornment in the cart, and it so happened that as he drove along he met Mr. Conklin, who had originally devised and provided the decoration which, he maintained, he had only lent to M. de Milt. "What are you doing with my tail?" Mr. Conklin inquired of Mr. Rhodes, and when the latter gentleman declared that the tail was his by right of purchase, Mr. Conklin temporarily settled the question of ownership by taking forcible possession of the appendage, remarking that if Mr. Rhodes wanted it he would have to go to law for it. He did. Mr. Conklin was sued for damages, and the judge, Mr. Justice O'Brien, awarded the plaintiff six and a-half dollars. It is said that Mr. Conklin has small respect for a law that will let one man sell another man's property, but Mr. Rhodes is sure that it stands to reason that the tail goes with the horse, whether it is an artificial tail or a real one.

SORE-FOOTED CAMELS.—The Rev. James Gilmour, in his book, "Among the Mongols," just published, when speaking of travelling in the desert of Gobi,

says: "After the camels had travelled some days, the soles of their feet began to wear through to the quick in one or two places, and had to be mended! The animal was thrown over on its side, its feet put up on a low stool, and the tender part covered by a patch of leather, which was held in its place by thin thongs drawn through the adjacent callosities of the sole. The animal's foot was mended very much as a cobbler mends a shoe."

RABIES IN FINLAND.—A sort of epizoöty of rabies has broken out in South Finland, and is spreading alarmingly. Several persons have died, and as the dogs that are mad rush across country, attacking everything in their way, pigs, cattle, and cats are sickening, and in their turn becoming dangerous. The authorities are killing every dog that does not wear a muzzle.

RABIES IN ASIA MINOR.—A correspondent in *Nature* for July 14th, mentions that jackals last winter entered the town of Bournabal, in the Smyrna district of Western Asia Minor. "This last winter being severe, it was noticed in the papers that rabies had extended to wolves and jackals, and to this circumstance was attributed their entering the villages and attacking people, and also their attacking the domestic animals."

Correspondence.

FRENCH WEIGHTS.

DEAR SIR,—I see in an article entitled "The Treatment of Actinomycosis," in this month's JOURNAL, that *six grammes* of iodide of potassium are administered, and in brackets 3½ *drams*.

Are not six grammes about 1½ drams, and *not* 3½?

Excuse my taking the liberty of pointing out this apparent discrepancy.

E. F. DE JONG.

New Veterinary College, Edinburgh.

July 2nd, 1892.

P.S.—The same applies to four or five grammes (about 2 to 2½ drams.) Are not *four grammes* about 1 *dram?*

[A gramme is equivalent to ·564 dram; therefore 6 grammes are equal to 3·386 drams, and 4 or 5 grammes to 2·257 and 2·822 drams.—ED. V.J.]

MAIZE FOR HORSES.

DEAR SIR,—Having under my control some large studs of horses, I was naturally much interested in the discussion on Professor Pritchard's paper on "Horse-feeding," read at the Midland Counties' V.M.A.'s meeting, as reported in your last issue.

I think it is a question of the greatest importance to the profession to know which foods, or mixtures of foods, yield the greatest returns at the lowest cost; and with the object of eliciting the views of other members, I pen these few lines.

I notice in the discussion that two gentlemen—Messrs. Malcolm and Hunting—speak very highly in favour of maize as a suitable food for horses; whilst others—Messrs. Gooch, Wragg, Carless, Stanley, Barling and Gibson—universally condemn its use; but I do not observe that any one of the latter gentlemen gives a satisfactory reason why it should be condemned.

Mr. Gooch says that when he was in Norfolk, maize, even when mixed with other food, caused "much mischief."

Mr. Wragg was "against it, even when mixed."

Mr. Carless "considered it should only be given to hogs and fat cows."

Mr. Stanley "was pleased to hear of the condemnation of maize."

Mr. Barling condemns it as giving rise to colic, asserting that since discontinuing its use the cases of colic have considerably diminished.

Mr. Gibson "does not like it."

I think it would be of great interest to the profession if the latter gentlemen would give their reasons for its condemnation, as it is difficult to understand why its use should be a success with Messrs. Malcolm and Hunting's studs of horses, and prove a failure with the others.

My own experience is that, when mixed with oats, and beans and chaff in suitable proportions, it forms an admirable food, and that where it is used horses are kept in better condition and more economically than where oats, chaff and beans only are employed.

With reference to colic, my impression is that it is almost invariably caused by irregular feeding, over-feeding, or feeding on food of inferior quality; and not by the use of any special kind of food, particularly of maize, as, from its laxative effect, it should reduce the predisposition to colic to a minimum.

Whilst on the subject, I cannot agree with Professor Pritchard in his disapproval of crushed corn, as I have frequently observed that a field or garden manured from a stable where whole oats were used, scarcely required sowing with oats to produce an abundant crop of the latter. The conclusion is obvious. Apologising for your space,

FREDERIC D. McLAREN, M.R.C.V.S.

Pentre, Pontypridd, South Wales.
July 14th.

[In discussing this question, the fact should not be overlooked that in the United States and in South America, maize is the principal, almost the only grain given to horses. It is the same in South Africa, where it is consumed in the form of mealies, *i.e.*, in the straw and head. It is also largely resorted to in feeding large studs of horses on the Continent of Europe, and has been very favourably reported upon.—ED. V. J.]

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Dr. W. G. Black, Edinburgh; Vet.-Captain J. A. Nunn, Lahore; E. F. de Jong, Edinburgh; E. Clarke, London; J. B. Wolstenholme, Manchester; A. W. Hill, London; Vet.-Lieutenant-Colonel Walters, London; Dr. and Vet.-Captain Oreste, Caserta, Italy; J. Cooke, Scarborough; F. D. McLaren, Pontypridd; Messrs. Arnold and Sons, London; P. P. Gordon, Queensland; W. Williams, Edinburgh: J. Clark, Coupar Angus; T. B. Goodall, Christchurch; H. G. Rogers, London; P. Moir, Edinburgh

BOOKS AND PAMPHLETS: *P. Champetier*, Les Maladies de Jeune Cheval; Encyklopädie der Gesammten Thierheilkunde und Thierzucht, Band X., Liefering 5; Procès Verbal de l'Academie Royale de Méd. de Belgique; Bulletin des Séances de la Soc. Nationale d'Agriculture de France; *A. Degive*, Manuel de Maréchalerie; Report of the Minister of Agriculture of Canada; *Drs. Moro and Pigorini*, Due Casi di Vertigine del Meniére; *Dr. D. E. Salmon*, Results of Experiments with Inoculation for the Prevention of Hog Cholera; *D. R. Stewart*, the Law of Horses.

JOURNALS, ETC.: *International Journal of Microscopy and Natural Science; Lancet; Indian Agriculturist; Recueil de Méd. Veterinaire; Annales de Méd. Veterinaire; Echo Vétérinaire; Mark Lane Express; British Medical Journal; Bacteriological World; Journal of the Royal Agricultural Society of England; Revue Vétérinaire; Repertorium der Thierheilkunde; Thierarzt; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Live Stock Journal; Edinburgh Medical Journal; Journal of the Society of Arts; Journal of Comparative Medicine and Veterinary Archives; Journal de Méd. Vétérinaire et de Zootechnie; Clinica Veterinaria; Moderno Zoiatro; Field; American Veterinary Review; North British Agriculturist; Journal of the Royal Geographical Society.*

NEWSPAPERS: *Cape Argus; Brisbane Courier; Edinburgh Leader; Eastern Counties Gazette.*